Digitized by the Internet Archive
in 2016

https://archive.org/details/veterinarianmont43unse

5

2144
1699

THE

VETERINARIAN:

A

MONTHLY JOURNAL OF VETERINARY SCIENCE

FOR 1870.

VOL. XLIII—VOL. XVI, FOURTH SERIES.

EDITED BY

PROFESSOR SIMONDS,

ASSISTED BY

PROFESSORS BROWN, TUSON, & VARNELL.

Ars Veterinaria post medicinam secunda est.—*Vegetius.*

LONDON:

PRINTED BY J. E. ADLARD, BARTHOLOMEW CLOSE.

PUBLISHED BY LONGMANS, GREEN, & CO.,

PATERNOSTER ROW.

THE

VETERINARIAN

FOR

1870.

VOL. XLIII.

PRICE 23*s.*, BOARDS.

619.05
VE
v.43

THE

VETERINARIAN.

VOL. XLIII. No. 505. JANUARY, 1870. Fourth Series. No. 181.

Communications and Cases.

PURGATIVES IN PERITONITIS.

By Professor Ferguson, H.M.V.S., Dublin.

In the treatment of traumatic peritonitis in the horse, resulting from the operation of castration, or from the accidental wounding of the abdomen, recourse is very commonly had to purgatives, most frequently to aloes, either in the solid form or in solution. According to my experience the propriety of giving purgative medicine in cases of peritonitis, unless in exceptional ones, is very questionable. I was first led to this conclusion from having observed, in hospital practice, that in peritonitis of the human subject the action of purgative medicine was almost always immediately preceded and accompanied by a great increase of pain, often amounting to agony, even in cases in which, previous to the peristaltic motion of the intestines being increased by the action of the medicine, the patient had felt comparatively at ease as long as the trunk and limbs were kept motionless, and the entire frame in the most favorable position to ensure immobility of, and freedom from pressure on, the abdominal viscera and the parts either covered, formed, or lined by the peritoneum.

The increase of suffering and aggravation of other symptoms, caused in peritonitis by the action of purgatives, are attributable principally to the great amount of friction to which the inflamed surfaces are exposed by the medicinally increased movements of the intestines among themselves within the abdominal cavity, and against the other viscera contained therein, as well as against the lining of its parietes. The torpid state of the bowels of animals affected with peritonitis, even if fed for a considerable time previous to the attack on laxative food, may be

regarded as a wise provision of nature to avert that increase of extent and intensity of peritoneal inflammation which would assuredly occur, as a result of the friction between one or other of the free surfaces of the inflamed serous membrane, were the peristaltic movements of the intestines continued at the normal rate.

On the same principle a joint becomes almost immovable if affected with synovial arthritis. If the inflammation within the articular cavity be very acute, the motive powers of the joint become, to a certain extent, paralysed. Although, in health, the movements of the articulation may be quite under the regulation of the will, under certain inflammatory conditions the joint becomes, during the continuance of such conditions, nearly a fixed one. It is an admirable provision that such should be the case, as, were the joint to be moved as if it were in a healthy state, the movements would but increase the inflammatory action of the opposed surfaces within the articular cavity. Although the principal movements of the intestinal canal within the abdominal cavity are caused by the involuntary muscular tissue, which, when the animal is in health, is in a state of almost continuous activity, it would appear that when the peritoneum becomes inflamed, the bowels become torpid. Is not this to prevent the inflammation of that membrane by increased continuance of the friction between the free surfaces, as a consequence of continuous intestinal peristaltic motion? During a course of experiments which I performed some years ago on the intestines and other abdominal viscera of animals, I almost invariably found that inflammation of the peritoneum was accompanied with a marked diminution of intestinal peristaltic actions, and diminished susceptibility to the action of purgatives; also that purgatives almost invariably increased the inflammatory action of the peritoneum, and, in many instances, caused its rapid extension and a fatal termination. Even when previous to the action of the medicine the inflammation had been confined to the serous membrane in the immediate vicinity of the abdominal incession, I found that opium, by causing torpidity of the bowels, and thus diminishing the peristaltic action of the intestines, caused not alone a diminution of pain, but also a mitigation of the other symptoms. In practice I generally combined a preparation of mercury with the opium. In some exceptional cases, where I had reason to believe there were impactions in the intestines, I tried to remove them by clysters and aperient medicine, but, under such circumstances, I always avoided aloes, or medicine in a solid form.

The aperient which I prefer is a mixture of oil and turpentine. Even in the horse turpentine seems to have a specific anti-inflammatory action on the peritoneum. As horses generally have their stomachs and intestines pretty free from accumulations within them when the operation of castration is performed on them, such animals, when affected with peritonitis, as a result of the inflammation consequent on the operation extending from the tunic vaginalis or the cord into the abdominal cavity, do not require aperients. These cursory observations are not intended to set forth the treatment for peritonitis: they only allude to a course which I consider a prominent feature in the too frequent maltreatment of the malady.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

The following observations on the anatomy and physiology of the horse's foot were commenced in 1858, while stationed at the Curragh Camp, Ireland, and were intended for insertion in the *Veterinarian* when completed. While engaged on them, however, and while endeavouring to pursue the studies necessary for the solution of many vexed points connected with this subject, I was suddenly ordered on active service in China; and since my return to England other occupations, of perhaps less importance, have occupied my leisure hours.

Originally begun with the intention of improving the farrier's art by founding it on the teachings of anatomy and physiology, I would scarcely now venture to offer them for perusal in our professional Journal, was I not conscious that since their commencement little has been accomplished, in this country, so far as I am aware, in perfecting our knowledge of this interesting and most important organ, and that doubt, error, and misconception yet prevail in much relating to it. I think the time has, perhaps, now arrived when many of these drawbacks should, if possible, be removed; and I, therefore, offer my observations to the attention of those who, like myself, are anxious to see, not only the farriers' art, but the veterinarian's science, benefited by the teachings of recent investigation into the composition and functions of this region, which, more than any others, demands such skilful treatment to maintain it in health.

In studying this subject, I have not neglected to refer to such treatises relating to it written by Continental veterinarians as were accessible at the moment. I have purposely refrained from entering at any length into the descriptive anatomy of the organ, but have confined myself chiefly to its general anatomy and histology, so far as these are related to its more essential physiological properties.

The editors of the *Veterinarian* have kindly and considerately consented to permit me to avail myself of woodcuts to illustrate my remarks, and the drawings for these will be made as accurate as possible; photography will ensure the fidelity of many, and for the microscopical delineations I have invariably employed the camera lucida.

I have, therefore, reason to hope that others who have more ability and opportunity than myself will be induced to enter on this investigation, in order to fill up the many voids which I have been reluctantly compelled to leave.

General observations.—In the technical language of zoology or comparative anatomy, that portion of the horse's limb which popular speech designates the "foot" is in reality only analogous to the extremity of the finger or toe of man, whose foot, resting on the ground by parts which correspond to the hock, shank, and foot of the horse, is otherwise widely different from it in structure and function. But as the foot of the horse is sometimes spoken of, even by veterinary surgeons, as identical with, or closely resembling that of man, and particularly in regard to its functions, and as this false analogy leads to erroneous conclusions and, perchance, unreasonable practice, I have thought it necessary to introduce the following figures of the skeletons of man and horse in similar attitudes, in order to show the comparative relations between the limbs of each (fig. 1).

The foot of the horse should, therefore, if we wish to study it comparatively, include the limb from the so-called "knee" and "hock" downwards; and then it will be found that what is styled the foot is only the digital portion of the member. Indeed, in the restricted sense in which the name is ordinarily employed, the terminal segment of the horse's limb may most aptly be compared to the end of a huge finger or toe, and affords us but a very imperfect idea of what we suppose or believe the human hand or foot to be, or even the feet of some other animals of the plantigrade or digitigrade orders, such as the bear or dog.

In the fore foot of the horse we may certainly trace a faint resemblance to the digital extremity of man's hand, and in the hind foot to the last phalanges of the toe; nevertheless, the

anatomical disposition of this organ in the quadruped is so peculiar, and withal so distinct from that observed in man and other animals, by reason of its greater simplicity, and its being undivided, that it has furnished a special character by which, in natural history, this and some other creatures possessing the like conformation have been classified as *solipeds, monodactyles,* or *solidungula.*

Though, to the comparative anatomist and physiologist, there is a certain disadvantage in being compelled to adhere

Fig. 1.

Fig. 1.—*a.* Commencement of the horse's hand, or fore-foot. *b.* Commencement of the human hand. *c.* Commencement of the horse's hind foot. *d.* Commencement of the human foot.

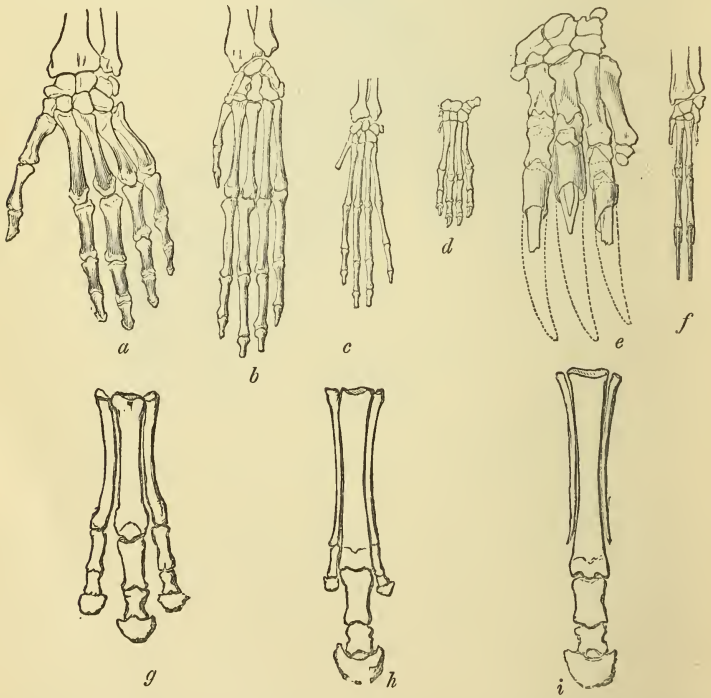
to the established custom of considering as the foot that which is only a portion of it, and thus shutting out from view important regions whose study is of much moment in relation to its structure and functions, yet it must be acknowledged that this drawback is largely compensated for by the great interest and importance that attaches to this beautiful and most wonderfully constructed organ, which has furnished matter for discourse, precept, and admiration from the earliest times.

A comparison of the digital extremity of the horse with the hand of man might lead a superficial or inexperienced observer to the conclusion that there is but little, if any,

analogy between them; and that while the latter is a most perfect instrument—as richly endowed as a tactile and prehensile organ as it is complicated in its mechanism—the former is nothing more than an insensitive mass of horn, designed to sustain the roughest usage in its natural or artificial state—to be, in fact, treated like a block of wood.

In this way the hand of man has certainly received its due meed of praise and admiration, while the human foot has been no less extolled. "Where," exclaims Mr. Hancock,* "in the whole range of mechanics, architecture, or engineering, can we meet with such a structure as this?" Doubtless these organs are very perfect, and wisely designed to perform certain functions under certain conditions. But it is questionable whether our wonder and admiration are not

Fig. 2.



more excited by an attentive examination of the same regions in the horse, or whether we do not find more to interest us in the matter of design and adaptation than we discover in either the hand or foot of our own species.

* 'The Lancet,' June 9th, 1866.

In man, the hand attains its most complex form, and from him, through a series of well-defined gradations, it reaches its simplest condition in the horse, in which, as remarked by Professor Owen,* the whole limb is a jointed ray, but every part is adaptively modified for special ends and reciprocal adjustment and interplay. In the monodactyle animal it is, in fact, the result of simplification from a complete ancestral condition of limb, in reference to the application of that limb to a more vigorous kind of locomotion.

This gradation from the complex to the simple form will be apparent in the foregoing drawings (fig. 2), in which we have the hand of Man (*a*), next that of the Orang (*b*), then the Spider Monkey (*c*), and afterwards the fore extremity corresponding to the hand of the Hyæna (*d*), Megatherium (*e*), Sloth (*f*), Paleotherium (*g*), Hipparion (or Miocene fossil horse) (*h*), and Horse (*i*).

It will be observed that there is a gradual consolidation or fusion of certain digital rays, particularly the middle bones, and abbreviation of others, chiefly the lateral ones, until, at last, we have in the horse what was the hand in man only represented by the middle or third finger, which constitutes the large, small, and hoof bones.

The transition from the highest or most complex, to the lowest or simplest forms, is far from being abrupt, the departure from the typical model proceeding only step by step, in concordance with the great law of unity. But, notwithstanding this evident chain of relationship, some discussion has taken place among comparative anatomists as to the type after which the foot of the horse (in its proper sense) is formed. By one party it has been asserted that it is the tridactylous type, and by another the pentadactylous. In a most able communication made to the Toulouse Academy of Science in 1868, M. Lavocat, the talented director of the Imperial Veterinary School of that city, demonstrates in a thoroughly convincing manner that the horse's foot belongs to the pentadactylous type.† The process of consolidation that has taken place between the Palæotheric and the Equine forms, as shown by this excellent anatomist, who quotes from the observations of the learned palæontologist, M. Lartet, is not only organic, but chronological. The true Palæotherium occupies the Eocene stage of geological history; the Palæotherium hippoïdes the inferior Miocene stage; the Hippotherium the upper Miocene epoch; and the Hipparion the Pleiocene period. These are all found in the tertiary formation, but

* 'Comparative Anatomy and Physiology of Vertebrates,' vol. ii, p. 306.
† 'Journal des Vétérinaires du Midi,' 1868, pp. 353, 401.

at successive depths or eras, commencing with the Palæotherium and ascending to the Hipparion—the fossil horse—each creation approaching, in the conformation of its foot, nearer to the Horse of our own geological epoch in solidity and simplicity.

As has been observed by Professor Owen, the discovery of the remains of the Hipparion supplied one of the links, required by Cuvier, between the Palæotherium and the Horse of the present day; and it is still more significant of the fact of filiation of species, that the remains of such three-toed Horses are found only in deposits of that tertiary period which intervene between the older palæotherian one and the newer strata in which the modern Horse first appears to have lost its lateral hooflets.

Through almost incalculable ages this tendency towards coalescence of the foot bones has been going on, and we see the result in the organ whose structure and functions we are now about to consider.

It will be seen that the ultimate stage in the apparent unification of the pedal extremity is the formation of a most perfect piece of mechanism, in every respect corresponding to the other parts of the members, which have been justly designated by the greatest of living anatomists, "the best of terrestrial locomotive organs." In the perfecting of these limbs the whole mechanical force, it may be said, is concentrated in a single hoof; and we search in vain throughout the animal kingdom for a similar organ endowed with so many valuable qualities.

True, the horse's foot has lost the prehensile faculty that so eminently distinguishes the hand of man and the quadrumanous animals—this has been transferred to the lips; but it has gained others which are of far more importance, and which entitle it to be looked upon as the highest development of a locomotory organ. Nature appears to have excelled herself in the construction of a marvellous work, which is at once a *chef-d'œuvre* of ingenuity, solidity, and simplicity, and in which complexity of function has been attained by the simplest means. For, in constructing the foot of this noble creature, she sought to do more than merely protect the extremely delicate and exquisitely sensitive structures contained within the hoof from injurious contact with the ground. This redoubtable difficulty is a comparatively insignificant one, if we consider the other portions of the task she set herself. It was necessary that the terminal extremity of the limb of such a glorious creation as the horse should be an organ endowed with the acutest tactile impressionability

for the instantaneous perception of the consistence and inequalities of the ground over which it moved; and while it possessed this quality in a high degree, it was also indispensable that it should be gifted with the properties of resistance, mobility, and lightness to an extent necessary for the support and progression of the body, in addition to the rigidity essential to impulsion, the elasticity and suppleness needful to avert reactions or jar, and the durability and rapidity of renovation demanded by incessant wear. Here we have a combination of requirements whose simultaneous existence in the one organ might almost be deemed incompatible, so opposite do they appear: insensibility with a delicate sense of touch; resistance with lightness; rigidity with elasticity; and suppleness with durability. And yet, as we shall see hereafter, all these objects are attained in a manner which is as startling as it is, perhaps, unequalled.

The late Bracy Clark, speaking of the horse, says: "With him is accomplished one of the most difficult problems in mechanics, that is to say, the moving of a large and heavy body, with an extraordinary velocity, and for the surmounting this difficulty a remarkable degree of solidity appears to have been imparted to his foot by a hoof of one piece, in order that nothing of the momentum afforded by the osseous and muscular machinery should be lost."

In its principal attributes it far surpasses the human hand or foot; and while it is devoid of the faculty of grasping possessed by the hand of man and some other creatures, it possesses the sense of touch in a sufficient degree to make it conscious of the nature of the ground over which it moves; at the same time the organ is beautifully adapted for certain important and special purposes. In the progressive series from complexity to simplicity, from the pentadactylous hand or foot of man and other creatures, through those with four, three, and two toes touching the ground, to the Eocene Palæotherium, whose two lateral digits were nearly as long as the middle one, and the fossil horse, the immediate predecessor of our own soliped, whose middle toe alone supported its weight on ordinary occasions, we find the qualities for which it is so pre-eminently distinguished gradually manifesting themselves.

It will be unanimously accorded that the horse ranks high above all those creatures of the animal kingdom which have submitted themselves to domestication and toil for the benefit of mankind. The varied uses to which he has been applied since first brought from a savage condition have been largly owing, no doubt, to the unmatchable combination

of strength, courage, speed, fidelity, and obedience, found concentrated in him; and though his great value depends upon a just disposition of these, yet more especially is it as a *living machine,* capable of producing motion and communicating it to inert masses at all times and in all situations that he is most to be prized. This quality has rendered him a most potent agent in advancing civilisation, and changing the aspect and destinies of communities and races, morally and physically; to no other creature, perhaps, beneath the dignity of man is the world so much indebted for its progress towards a higher and more beneficent civilisation. And even now, with all our wonderful mechanical appliances, and our almost limitless mechanical genius, our every-day life would be sadly marred in its course, or shorn of much of its utility and pleasure, if deprived of the services to be obtained from this slave. And it is scarcely necessary to remark that this effective utilisation of the horse is mainly due to the character of its foot, which is so constructed as to make it to meet demands that could not be imposed upon any other animal; while the horny box enveloping it, by its being a very slow conductor of heat, protects it from the extremes of temperature in Northern* as well as in Southern regions.

Seeing, then, the important relation the foot bears to the efficiency of the horse, we cannot be surprised that this organ should have had a large share of attention devoted to it from the earliest times to the present. Indeed, nearly every one of the ancient writers who treated of the horse centre their inquiry on the quality of its feet; and no matter how beautifully formed the other regions might happen to be, if these were faulty, all was bad. Xenophon, the Greek general and horseman, some 2270 years ago writes: "In respect to the horse's body, then, we assert *that he must first examine the feet,* for as there would be no use in a house, though the upper parts were extremely beautiful, if the foundations were not laid as they ought to be, so there would be no profit in a war-horse, even if he had all his

* We are all aware that horses can be successfully utilised, so far as their feet are concerned, in the hottest regions of the globe; but whether they can be so employed in the very coldest Wrangell leads us to doubt. Travelling in the far north of Siberia, he writes:—"The poor horses suffer at least as much as their riders, for, besides the general effect of the cold, they are tormented by ice forming in their nostrils and stopping their breathing; when they intimate this by a distressed snort and a convulsive shaking of the head, the drivers relieve them by taking out the pieces of ice to save them from being suffocated. When the icy ground is not covered by snow, *their hoofs often burst from the effects of the cold.*"—'Narrative of an Expedition to the Polar Sea in 1820–23,' p. 366.

other parts excellent, but was unsound in his feet, for then he would be unable to render any of his other good qualities effective."*

And Horace, in one of his famous satires (book ii, Satire 2), alludes to the care exercised in the purchase of horses 2000 years ago: "This is the custom with men of fortune: when they buy horses, they inspect them covered: that if a beautiful forehand (as very often happens) be supported by a *tender hoof*, it may not take in the buyer, who may be eager for the bargain because the back is handsome, the head little, and the neck stately."

Among hippiatrists and equestrians at all times, this, the foundation of the edifice, has been looked upon as the most valuable point in the horse when sound and well-conformed, and the gravest defect when diseased or naturally weak. "No foot, no horse!" exclaims Jeremiah Bridges,† in the middle of the last century; "Incerta basis instabile ædificium," writes Bracy Clark;"‡ "Pas de Pied, pas de Cheval," says the French proverb. Indeed, the maxims and aphorisms in use in later times are but a re-echo of what were enunciated ages ago, and their truth receives daily confirmation. For the proper manifestation of his strength and the full development of his useful qualities, the horse must rely upon the soundness of his feet, as in them are concentrated the efforts created elsewhere, and upon them depend not only the sum-total of these propulsive powers being profitably expended, but the solidity and just equilibrium of the whole animal fabric is subordinate to their integrity.

It is therefore considered, and justly, that the foot of the horse is the most important part of the whole locomotory apparatus, and that all the qualities possessed by this animal may be depreciated or hopelessly lost, if, through disease, natural or acquired defects, or other causes, that organ fails to perform its allotted task. It cannot be denied that the demands of civilisation, and the artificial manner in which the horse is kept and employed, have entailed upon it many maladies which might by care and skill be averted. More especially is this the case with its foot. Indeed, for more than a century it has been asserted that nineteen out of every twenty, or ninety-nine out of every hundred horses that are lame, are so in this organ;

* De Re Equestri.

† 'No Foot, No Horse: An Essay on the Anatomy of the Foot of that Noble and Useful Animal, a Horse.' London, 1751.

‡ 'A Series of Original Experiments on the Foot of the Living Horse. London, 1809.

and, knowing what farriery generally is, and the evils that attend its unscientific practice, it is scarcely too much to say that ninety per cent. of these foot lamenesses are due, directly or indirectly, to ignorance of the rules which ought to govern that art.

The study of the foot is then a matter of the greatest moment whether it be with reference to its preservation in health, or restoration to efficiency when in a diseased condition. To this end, an intimate acquaintance with its normal structure and fuctions is, above all things, requisite; and right well this acquisition repays the diligent student of nature in the glorious revelations of adaptation and design it affords throughout its entirety; for it is in the horse's foot, if anywhere in the animal body, that those beautiful and marvellous means for accomplishing certain definite purposes and devices to meet various contingencies are best displayed. Amid its wonders, and in the intricacy of its complicated mechanism, we behold everything—the arrangement, construction, and mutual relationship of bones, tendons, ligaments, vessels, nerves, and external protection or hoof—

> Ordered by an intelligence so wise,
> As might confound the Atheist's sophistries.

The rugged, repulsive-looking hoof, which, to the uninformed, is nothing more than an uncouth carapace of horn, conceals a world of marvels; for the student will quickly discover that the apparent simplicity of disposition of its component parts, and the fact of its being a solid foot, does not render it the less complex or difficult to examine, nor diminish, but rather enhances, the beauty and wisdom evinced in its architecture.

Few organs have been more carefully scrutinised and described, even within this century, and none, perhaps, have yielded fewer satisfactory results, so far as the horse is concerned. With a few rare exceptions, the study of the horse's foot has given rise to and perpetuated the most extravagant theories, which, when applied to the management of the organ, in health or disease, have been, and are now, productive of very serious injury. And yet this study, guided by reason and common sense, should bring us to the conclusion that the foot does not require to be endowed with any accessory and wonderful properties beyond those already conferred upon it; that it is constructed on a plan in harmony with other parts of the body; and that the due maintenance of its structures in their natural condition, and the full development and integrity of its functions are, above all other

considerations, necessary to the well-being, comfort, and successful utilization of the horse.

And this study should prepare the way for a correct appreciation of the management of the horse's foot, and for a consideration of shoeing in its triple import of protector to the base of the edifice—the hoof—an aid to progression, and a remedier of defects when foot or limb are defective.

Considering the important *rôle* assigned to its armature—which is destined to operate either for good or evil, according as it may be applied, though in the largest majority of cases it is the latter—and reflecting that in nearly every instance the shoer of horses is all but, if not utterly, destitute of the most superficial knowledge of the anatomy and physiology of the delicate organ he is constantly in the habit of manipulating and controlling in some fashion after the routine or traditions of his craft, it can scarcely be denied that at least a sufficient acquaintance with the essential features of the foot, structurally and functionally, should form the groundwork of every rational system of farriery.

The acquisition of this knowledge appears to be even imperatively demanded; for is it not a fact that the universal custom is to treat the horse's foot on principles which are the very opposite of rational—to do to it that which a slight insight into its structure and functions would show to be utterly wrong, and pregnant with the most serious consequences to the unfortunate animal? The disastrous effects of improper shoeing—of shoeing as it is ordinarily practised—can scarcely be sufficiently dwelt upon.

To practise the art of shoeing, says a most distinguished professor of Veterinary Science,* with a perfect understanding of its means and object, it is indispensably necessary to know the organization of the region on which the shoe ought to be fitted; the mechanism of its functions; how these functions are related to those of all the other regions of the limb; and, finally, what is the influence of the position of the foot on the direction of the rays above it, as well as on their integrity. In other terms, it is impossible to be really intelligent and competent in the art of shoeing—to know all its resources, and to properly employ it in so many diversified ways in practice—if the anatomy of the foot and the physiology of locomotion be ignored.

It is impossible in any art—and shoeing is no exception to this rule—to acquire a veritable superiority, if its theory as well as its practice be not combined and exercised together.

* H. Bouley, 'Nouveau Dictionnaire, &c., Vétérinaires.' Article "Ferrure."

Practice without theory is simply routine without improvement, and theory alone is often impotent to confer advantages without the crucial test of experience.

In these observations, therefore, the requirements of the farrier's art are those which have been most persistently kept in view when discussing the wonderful organization of the horse's foot, and the scientific maxims which ought to govern it are only introduced to elucidate what is meant by a rational practice of that art. It is impossible for even the casual amateur not to be interested in the conformation and preservation of an organ so exquisitely adapted to the manifold purposes to which the horse is applied by us; and though these matters have for many years engaged the attention of several eminent men, who have treated them in an earnest and philosophical spirit, yet recent research and experience have yielded results which have not yet been fully appreciated, if at all noticed. A description of these, in addition to what was before known—though I fear not generally—will, it is to be hoped, tend to diffuse a more intimate knowledge of the structure, functions, and preservation of an organ on whose maintenance in health not only the utility, but the comfort of the noblest and most useful servant ever brought under the dominion of man chiefly depends.

THE CATTLE MURRAIN OF INDIA.

By E. Stanley, V.S., 5th Lancers.

Bengal; *Sept. 28th*, 1869.

Since the visitation of rinderpest to the British Isles in 1865-6, the subject of Cattle Diseases has excited considerble attention on the part of the Indian Government, and as army veterinary surgeons are liable to be called upon to investigate and report on epizootic outbreaks, it is important we should be acquainted with their history.

My principal object in writing this paper is to elicit the opinion of the profession as to whether the disease or diseases alluded to are identical with the rinderpest of Europe, or whether they are distinct varieties of the zymotic class.

I may briefly state that I have availed myself, among other official papers, of the 'Records of Cattle Diseases'* (which I recommend to inquirers), and especially Dr. K.

* 'The Records of Cattle Diseases,' published by Indian Government. Calcutta, 1868.

McLeod's very able Report. Following his arrangement, I will proceed with—

I. *History.*

As early as the year 1811 a cattle murrain was reported from Hoonsoor, in the Madras Presidency. Mr. Gudgin, V.S., ascertained that cattle disease had prevailed in British Burmah for forty or sixty years, similar in character to the epizootic he was investigating in 1866. Similar diseases were recorded in Lower Bengal in 1836, and there are strong grounds for believing they have existed beyond recollection. Since 1836 epizootic outbreaks have been frequently reported from different parts of the country, and during the present time are prevailing in Assam, to the east of Calcutta, in the district of Benares, and probably in other parts of the country.

II. *Geographical Distribution.*

Epizootic outbreaks have occurred in* Ceylon, Mysore, Madras, Bengal, Oude, the North-West Provinces, to Dehra at the foot of the Himalayas, and in Burmah. I have no opportunity of ascertaining their existence in the Bombay Presidency.

III. *Varieties and Names.*

From a careful consideration of the reports of the different outbreaks, I believe the diseases are all included under the three following names, Khorah, Gootee, and Puschima, and I think the two latter might be beneficially included under the one title of the cattle murrain of India.

1st. Khorah, from *khoor*, a hoof, called in different districts by a variety of names, as koorea, khoraha, &c., is the eczema epizootica of veterinary nomenclature, but accidental diseases of the feet, and thrush, are included in these terms.

2nd. Gootee, or Indian smallpox. Other common district names are mata, chechack, boshonto, &c. An eruptive fever, very extensively spread throughout the country, and not unfrequently assumes an epizootic character.

3rd. Puschima, a malignant disease so closely resembling the so-called smallpox that it is frequently known by the same names, and is, I believe, a severe form of the same disease; but, to accord with previous writers, I shall speak of them as distinct. This form puschima in many respects resembles the rinderpest of Europe, but differs in important

* Mr. Worms, of rinderpest renown, was deceived by the analogy of puschima (with which he was probably familiar) and the rinderpest of Europe, or he never would have vaunted his specific gruel,

details. I find no record of pleuro-pneumonia. With this exeeption Indian cattle are not exempt from the many ailments with which we are familiar at home.

IV. *Mode of origin and spread of epizootics.*

Sporadie cases first occur, the infection spreads from one to several, and in some outbreaks rapidly over the majority of the fold. Early cases are more virulent and fatal than those which take place towards the end; the disease seems to exhaust itself and disappears.

It is when they assume an epizootic character that they attract attention; but I expeet their existence in a mild form is by no means uncommon, as the natives appear quite familiar with them. Khorah and gootee have occurred at the same time, but have no relation to each other. Gootee and puschima are frequently and perhaps always associated.

Among animals liable to these diseases are eows, buffaloes, sheep, goats, deer, pigs, poultry, wild animals, and even horses. But it is essentially a bovine malady; neither age, sex, nor condition appear to influence its attack.

Some outbreaks have occurred during the prevalence among men of such epidemics as fever, eholera, and small-pox. This only shows the existence of a combination of conditions highly favorable to the propagation of diseases.

V. *Causes.*

The germs of specific diseases are always extant, and under favorable circumstances become epizootic influences. These epizootics may occur at any time of the year, but are more common during the dry, hot months preceding the rains, and often die out during their prevalenee.

Malarious tracts abound, and the country is mostly flat, but the diseases are not confined to the plains, as they visited the Neilgherry and Shevaroy Hills Scareity of food and water is very general during certain months; herds graze over miles of country where there is searcely a blade of green grass to be seen, suffering severely from this exertion during the intense heat, and quench their thirst from stagnant pools that contain the remnants of the previous year's rain

The true origin of these speeific diseases remains yet to be discovered. That they are infectious and contagious is beyond doubt, but their power of propagation is liable to very great variations; sometimes a whole herd will succumb, at other times the mortality is so slight as to attract little

or no attention, and very many animals exposed to the infection escape the disease altogether.

VI. *Symptoms.*

1st. The symptoms of khorah, or eczema epizootica, differ in no respect from those observed in Great Britain or elsewhere. I merely allude to the disease as it is sometimes confusedly described with gootee and puschima; but no veterinary surgeon would hesitate in recognising its diagnostic vesicles on the tongue and coronets. In some of its outbreaks it has assumed a severe form, but it is by no means a fatal malady.

2nd. Gootee, boshonto, or mata. The constitutional disturbance is serious and severe; sometimes it is of a malignant type, the mortality excessive, when many animals succumb before the diagnostic eruption appears. More often its attack is comparatively mild. The period of incubation is probably short (from ten to fifteen days), but has not been satisfactorily determined.

a. Premonitory symptoms. The animal is dull, listless, stands apart from the others, appetite diminishes, skin becomes dry and rough, lactation ceases.

From two to four days later a shivering fit ushers in the second or febrile stage; temperature becomes elevated, pulse and respiration accelerated, ears droop backwards, food is refused, rumination is suspended, thirst is marked, watery discharges from the eyes and nostrils, and slavering from the mouth (some observers have remarked swollen tongue, with pointed elevations, vesicles have been named. I noticed very small ulcers confined to the dorsum of the tongue), urine is high coloured, fæces firm and slimy, the general appearance is of severe sickness, head drooping, back up, flanks hollow, remain stationary, with eyes dull or bleared.

From the fifth to the sixth day the third or eruptive stage sets in, it is usually preceded by one day's diarrhœa, which consists of broken-up slimy evacuations, becoming mixed during the next few days with serum, mucous, and sanguineous discharges, which have been described "as brownish-black," as "watery, and very offensive," and after four or five days is dysenteric.

The eruption is variously described as "essentially vesicular," "eruption of dry pustules," "vesicles which subsequently maturate," "pimples or scabs; and by Dr. McLeod "as consisting of small black or light yellow crusts, set in small ulcers, and surrounded by a ring of redness."

The extent of the eruption and size of the crusts vary in

different outbreaks; it is usually scattered over the whole body; the skin has been wiped almost free of hair, leaving it red and raw; the extent to which the hair can be removed is a good index of the severity of the eruption. Some observers record a similar eruption in the mouth, palate, and alimentary canal; aphthous ulcers have been noted on lips and gums, but are rare appearances. When the disease is of a still more malignant form no eruption has appeared, the fever assumes a typhoid character, the discharges from the eyes and nose become sticky, ichorous, or even purulent and fetid, prostration and death ensue, usually between the fifth and tenth days. A slight eruption, with continuous diarrhœa, are bad symptoms. If the eruption comes out freely, accompanied by cessation of fever, the fæces change their character, and although they continue thin, assume a natural colour, the discharges from the head diminish, an inclination for food is shown, and the patient slowly recovers in from fifteen to twenty days; but in some cases imperfectly, lingering on for months without thriving or putting on condition.

A second attack of gootee is almost unknown.

I cannot determine the numbers that escape infection, although exposed to the disease, but am inclined to believe in some outbreaks it is very large, as isolation is very rarely attempted. It is important to bear this in mind when considering the high rate of mortality,—from 40 to 80 per cent. of those actually attacked. I think more deaths are attributable to neglect and starvation during the progress of the sickness than to its virulence; the natives are so apathetic that they will not even supply the patient with gruel sufficient to maintain life. I am confirmed in this view by the recoveries amongst Government cattle, and also by the success of Mr. Thacker's treatment in the Madras Presidency.

3rd. Puschima. This terrible epizootic is thought by many to be identical with the rinderpest of Europe. The symptoms closely resemble the severer forms of gootee; mouth hot, breath fetid; in some cases ulcerated spots are observed on the nasal membrane, which is deeply red; the spots are small, superficial, irregularly edged, and of a yellow tinge. In rare cases the mouth, opposite the incisor teeth, shows a *few* sores; the evacuations are more fetid; diarrhœa sets in on the second or third day, and is described as "thin, ejected with violence, mixed with mucus and air, and shortly with blood." And by Mr. Gudgin, V.S., in the Birmah epidemic, 1866, as "a dark, coffee colour, tinged with blood, but more frequently of a dirty yellow colour, thin, and offensive to the smell." Cracks in the skin have been named,

but no eruption (death occurs before the eruptive period of gootee). Dr. McLeod thinks the eruption probably may be found in cases that recover. Some die after a few hours' illness; the majority on the second or third day after the commencement of dysentery, or between the fourth and sixth days is the average of several outbreaks. Complete restoration occurs in about thirty days.

Dr. McLeod says, "Although the absolute loss of cattle in Bengal is probably less from this form of disease than from gootee, the ratio of deaths to seizures is much greater;" it has been variously estimated at from 50 to 95 per cent.; small herds have been entirely swept off. In British Birmah the loss in 1865 was estimated at 100,000, but the numbers that escaped infection is not named. This disease, like gootee, exhausts itself and disappears, though carelessness and indifference, or rather trusting to fate, as the natives express it, gives every facility for extension *ad infinitum*.

I have appended in a tabular form (see pages 20—23), noted almost in the words of the observers, the morbid appearances in several epizootics; their similarity is remarkable, but the cattle disease of England differed in several respects, sufficient, I think, to deter us from including all under the one head of rinderpest (other observers have described *post-mortem* appearances too imperfectly to be of use for comparison).

VII. *Treatment.*

There is no specific, therefore we must have recourse to palliatives.

1st. Segregation rigorously and properly carried out is of the utmost importance.

2nd. The liberal administration of nutritious fluid diet, with assiduous attention to general comfort.

3rd. Medicinal agents must depend on the state of the patient, and the resources of the district. I am no advocate for Dr. Norman McLeod's EIGHTY-SIX prescriptions.

4th. Carcases should have their skins slashed (to make them valueless), and be immediately buried; as chumars, dogs, jackals, and birds of prey, may easily spread the infection.

5th. Inoculation. Of its utility and importance it is of little use speculating, when we reflect on the innumerable difficulties of such research in India; but the extraordinary triumph of vaccinia over variola makes me think the relation of gootee to puschima highly worthy of thorough investigation, with the view of determining whether inoculation

(*In continuation see p.* 24.)

Post-mortem appearances of some Cattle Epizootics,

Place and Date.	Skin.	Nasal Passages.	Larynx and Trachea.
Lambert, Ceylon Epizootic, 1842. Several cases.	Not noted.	Not noted.	Inflamed, and full of frothy mucus.
Long, Assam Epizootic, 1853. Several cases.	Subcutaneous and intermuscular tissue affected with gangrene.	Lining membrane inflamed.	Mucous membrane inflamed to smallest ramifications, with patches of gangrenous inflammation.
Rutherford, Calcutta Epizootic, 1864. Several cases.	Not noted.	Membrane inflamed, thickened, covered with exudation; abrasions, and ova of flies.	Larynx inflamed; trachea less so.
Dr. Bristowe, Cattle Plague, England, 1865-6. Several cases.	Often not noted. In several cases an eruption on the udder and teats is named.	Not noted.	Deep congestion; submucous extravasation; hæmorrhage, and lymph-like exudation.
Gudgin, Birmah Epizootic, 1866. Twenty-three cases.	Between hind legs presented redness, or a few cracks and sores.	Mucous membrane intensely congested, of a deep red colour, dotted over with raw spots, points of ulceration, or patches of exudation. More disease posteriorly.	Lining membrane congested, and covered with exudation. The congestion extends into the ramifications of the trachea.
McLeod, Tessore Epizootic, 1867. One case.	Skin rough. A few crusts on neck, belly, and udder, with surrounding redness. No pustules.	Mucous membrane thickened and inflamed.	Lining membrane red, covered with viscid mucous; submucous tissue infiltrated; tracheal mucous membrane congested to smallest ramifications.
Stanley, Benares Epizootic, 1869. One case. Died on ninth day.	Eruption well-marked over the whole body; superficial excoriations over the head and face.* Crusts readily removed by slight friction, hair and cuticle coming away, leaving circular superficial excoriations, size of split peas.	Congested.	Only slightly congested.

* Probably caused by the crusts having been washed

arranged in a tabular form for comparison.

Lungs.	Heart and Blood.	Mouth and Pharynx.
Inflamed.	Healthy, filled with coagulated blood.	Œsophagus inflamed; mucous membrane one mass of pus.
Contained abscesses infiltrated with dark-brown livid pus.	Heart softened, pale, and yellow; contained black grumous blood. Lining of arteries stained.	Mucous follicles ulcerated; membrane inflamed, detached, and shreddy; contained brown fetid pus.
Not noted.	Blood grumous.	Tongue swollen; effusion into muscular substance; mucous membrane thickened, and covered with muco-purulent fetid secretion; pharynx inflamed, thickened with greyish exudation; œsophagus inflamed.
Congestion, and interlobular emphysema.	Hæmorrhage under lining of left ventricle. Cavities sometimes contained soft clots, sometimes were empty.	Aphthous condition, with congestion and excoriations of lips, gums, tongue, and palate.
No disease of pleuræ, or effusion; lungs emphysematous, and invariably congested.	Muscular substance flaccid; cavities empty; blood very dark, fluid, and coagulating on exposure.	Tongue furred anteriorly; base congested; swollen follicles, filled with lymph; muscles soft, showing points of extravasation; fauces and pharynx highly congested, and covered with greyish exudation; soft palate, congested, with spots of abrasion; œsophagus healthy.
Lungs pink, uniformly congested, slightly condensed; vessels contained clots.	Heart contained firm dark clots—small white clot in right ventricle—clots extending into large vessels; blood grumous.	Mucous membrane of mouth swollen; tongue of a livid colour, covered with viscid secretion; mucous membrane of pharynx intensely inflamed, covered with a thick white pellicle; membrane much thickened and infiltrated.
Slight interlobular emphysema.	Heart healthy; clotted blood and lymph extended from auricles to ventricles.	Lips and gums quite healthy. A few small ulcers of irregular size and shape, filled with a hard yellow excretion that could not be scraped away, were on the sides of the root of tongue; also on the soft palate, and in the fauces surrounding the glottis, the mucous membrane was highly inflamed and purplish. No aphthous exudation, and the sub-mucous membrane nowhere exposed.

off, as they were abundant under the jaw.]

Post-mortem appearances of some Cattle Epizootics,

Place and Date.	Stomachs, 1st, 2nd, 3rd.	Fourth Stomach.	Small Intestines.
Lambert, Ceylon Epizootic, 1842. Several cases.	1st, 2nd, normal; 3rd, contained layers of hard food.	Inflamed.	Inflamed.
Long, Assam Epizootic, 1853. Several cases.	1st, distended and inflamed in large patches; 2nd, contained dark-green fluid; 3rd, similar; membrane inflamed.	Mucous membrane inflamed.	Inflamed, especially upper and lower parts.
Rutherford, Calcutta Epizootic, 1864. Several cases.	1st and 2nd, inflamed; 3rd, occasionally "fardel bound."	Empty; lining red; dark red in patches; swollen, and thickened; mucous membrane easily detached.	Inflamed similar to, but less intensely than the stomach. Occasional ulcers met with.
Dr. Bristowe, Cattle Plague, England, 1865-6. Several cases.	1st and 2nd, contents normal; occasional patches of congestion in rumen; 3rd, congested in circumscribed discs; occasionally sloughing ulcers.	Patches of congestion, with small ulcers, and occasional sloughs.	Deeply congested; sometimes hæmorrhagic.
Gudgin, Birmah Epizootic, 1866. Twenty-three cases.	Contents of all soft; lining membranes healthy.	Lining membrane thickened, and ulcerated; yellow deposits of lymph upon it; contents liquid.	Congested. Patches of yellow deposit in the neighbourhood of Peyer's glands; occasional desquamations; sometimes ulceration; contents fluid.
McLeod, Tessore Epizootic, 1867. One case.	1st, contained a small quantity of fetid grumous matter, inflamed, and abraded; 2nd, 3rd, contents dry and hard.	Contained an enormous quantity of dry food; mucous membrane very dark.*	Ileum much congested; small lenticular elevations on mucous membrane, containing a wax-like substance, and surrounded by congestion.
Stanley, Benares Epizootic, 1869. One case. Died on ninth day.	Contents of all semi-fluid. No abnormal appearances of their lining membranes whatever.	Patches of slight congestion; small superficial ulcerated spots towards pyloric aperture. Contents fluid.	In the duodenum, well-marked, scattered, ulcerated spots, similar to those observed in the mouth; patches of congestion in the ileum, with scattered ulcerations, which in some places were confluent, and by scraping away the waxy excretions the pale, muscular tunic was exposed; ulcerations became more numerous towards the cæcum; contents fluid.

* Descriptions of 1st and 4th stomach appear

arranged in a tabular form for comparison—continued.

Large Intestines.	Liver.	Spleen.	Kidneys.
Inflamed and ulcerated; rectum particularly so.	Turgid and inflamed.	Not noted.	Not noted.
Contained lumpy fæces, and a yellow fluid.	Soft, dark, livid; gall-bladder moderately distended.	Engorged.	Congested.
Empty and slightly affected; rectum much inflamed.]	Highly congested and enlarged.	Not noted.	Not noted.
Deeply congested; sometimes in longitudinal streaks.	Often healthy; sometimes pale; gall-bladder usually full.	Healthy.	Healthy.
Inflamed; covered with effusion, or abraded; sometimes ulcerated; contents fluid and fetid.	Congested. Gall-bladder full.	Friable; black; not enlarged.	Healthy.
Upper portion congested; lower portion intensely so, and abraded; mesenteric and other glands enlarged and engorged.	Yellowish; friable; gall-bladder distended with bile.	Engorged.	Pyramids congested.
In the cæcum ulcerations, covered with waxy exudation, abounded, and were so confluent that scarcely a spot of entire mucous membrane remained. In the colon single and confluent ulcers scattered through its entire length, with an occasional apthous deposit, near its union with the rectum for two feet; the mucous membrane was entirely destroyed, being a mass of ulceration, with cheesy exudation. In rectum isolated ulcers.	Healthy; gall-bladder full.	Healthy.	Healthy.

to have been entered *vice versâ*.

with gootec virus mild cases of gootce are by no means rare would render inert the infection of puschima; and also to ascertain whether by diluting the virus, or by carrying it through a succession of removes (animals), it might be rendered comparatively harmless (the effects of vaccine also merit observation). If such happy results could be obtained, inoculation could be as easily carried out as vaccination is amongst the people; and then a sudden outbreak of the dreaded scourge would be nipped in the bud. I know it has been attempted, but determined and thorough experimental investigation, and the expenditure of talent, patience, time and money, are required, before such a golden chance of success should be relinquished.

VIII. *Pathology.*

These diseases belong to the zymotic class, and are closely allied to the exanthemata, or eruptive fevers. Their essential nature is expressed summarily in the following definition:

After an interval of longer or shorter duration has elapsed between the exposure to the specific cause of the disease and the appearance of its symptoms, certain phenomena indicating general disorder of health appear. These having lasted from a few hours to a few days, are succeeded by a febrile condition of the body, which varies in degree and type according to the form of disease and general character of the epizootic, and is revealed by increase of temperature, and certain definite disturbances of the functions of the body.

After this condition has prevailed for some time, certain specific lesions of the mucous or cutaneous surfaces, or both, are manifested, in some cases accompanied by affections of the lymphatic glands in relation to these.

The constitutional symptoms now undergo a change, and within a certain time a fatal result from general exhaustion, or the development of some special complication, or an improvement in the character of the symptoms presaging recovery takes dlace.

What the origin or nature of the poison producing the specific symptoms in these several diseases is, we are quite ignorant of.* Whether it is the same poison in different degrees of intensity, or different poisons, we are equally unable to say. The utmost we can say of *contagium* is that, from the fact of its effects being intensified by certain unsanitary conditions, and

* Described as morbific germinal matter in the blood, by Professor Beale in his 'Microscopic Observations on the Cattle Plague,' 1866.

capable of extension from one animal to another, there is a strong presumption of its existence, as a substance capable when brought into relation with an animal of causing the disease. From the rapidity of the spread of the disease, we infer that the material is very subtile and diffusible, and most probably capable of being conveyed by the atmosphere.

The comparative virulence of infecting material is inferred from the kind of reaction which ensues on their introduction into the body. Thus, the poison causing "eczema epizootica" and "vaccinia" is, in the great majority of cases, mild, producing no sudden or striking nervous reaction, involving little or no change or vitiation of the functions of the body, stimulating little or no destructive tissue changes, interfering to a very slight extent with secretions, and quietly working out its own elimination through the channel which, for an inscrutable reason, it selects. The poison of "gootee" is reckoned to be more pernicious, because the reaction is more severe. The nervous system is primarily attacked, and general dulness, uneasiness, and shivering evidence the poisoning agency. The functions are gravely involved, tissue change of a destructive character is soon initiated; secretions become depraved, and the elimination of the poison from its seats of selection is accompanied by violent local action; inflammation in all cases, abrasion and ulceration in many, and erysipelatous gangrene in some.

In puschima and rinderpest we have the extreme of virulence. In these diseases the action on the nervous system is so pernicious that poisoning may ensue at once without the development of any other organic disturbances. When these, however, ensue, their severity, their rapidity, and their fatality are most marked, and contrast strongly with the other diseases.

On comparing eczema epizootica, vaccinia, gootee, puschima, and rinderpest, a remarkable sequence is disclosed, the whole forming a natural group of diseases, with eczema at one end and rinderpest at the other.

Is puschima preceded or followed by gootee?

Mr. Thacker reports on the Kurnool outbreak of murrain, or puschima, in 1863. The eruptive form, or gootee, was present, although to so slight an extent that he considered the disease assumed a pustular (*i. e.* eruptive) form at certain seasons of the year. In the Assam outbreak, 1867, puschima subsequently assumed the form of gootee.

Mr. Farrel, reporting on the Sunderbunds' outbreak, 1869, speaks of the two diseases as identical. And during the

Benares outbreak, 1869, they were associated, cases of gootee lingering on several weeks after puschima had disappeared.

Are these diseases analogous or identical with the rinderpest of Europe?

Mr. Gudgin, on puschima in Birmah, 1866, says, "It is analogous to, or identical with, the rinderpest raging in England (1866), exhibits the same symptoms, attacks the same structures, runs its course in the same period, is characterised by the same amount of mortality, and displays the same *post-mortem* lesions."*

Mr. Thacker, on the Madras Presidency outbreak, 1867, frequently alludes to the disease "as a type of rinderpest."

Mr. Farrel reported rinderpest in the Sunderbunds, 1869.

Mr. Barrow reported rinderpest in Benares, 1869.

Other writers speak quite as confidently, but being non-professionals their opinions are valueless.

It is important to note Dr. McLeod's conclusions, as at one time he thought puschima was rinderpest. He says of the Calcutta epizootic, 1865, it "differs little from rinderpest." After comparing Dr. Murchison's Report of the Royal Commission, he considers "the cattle plague of England more closely resembled gootee than puschima;" further on he says, "and puschima, if it is really void of a cutaneous eruption, which I doubt, is in that particular different from rinderpest."

Having been placed on a Committee of Inquiry into the Benares epizootic of 1869 (during Mr. Barrow's absence on sick leave), I will very briefly give its history and a few details from observation.

The existence of the diseases in villages in the Benares division, had been reported to Government some weeks before its appearance in the Government Commissariat Cattle Lines, by the collector, Mr. Maynard Brodhurst (to whose inquiries I am much indebted for information of the malady). It appeared amongst a herd of 296 slaughter cattle, 184 of these had been purchased at a fair ninety miles away, and arrived on February 18th. Between March the 13th and 21st thirty-five beasts died, being two thirds of the number that sickened (from Mr. Barrow's report the disease appears to have been puschima); it broke out in the fresh arrivals, and spread to the old stock. Eighteen animals were destroyed by Mr. Barrow's advice, and the plague stayed.

On April 19th another herd of 292 arrived; none were ill during nine days in March, although the diseases existed in villages *en route;* between April 24th and May 5th, 77 sick-

* I am unable to get a complete copy of his report.

ened and 31 died, the disease ceasing from that date. Notice, although the disease was of a severe type, how few sickened, and how few died. Can this be rinderpest? Puschima occurred about the same time in the neighbourhood, and especially among the Rajah of Benares' Cattle, but the mortality was comparatively trifling.

Mr. Brodhurst by rough estimates calculated that sixteen hundred (1600) cattle died from disease or poison between October 1868 and May 1869 in the Benares division, but this only gives a total of *one* per cent. for the total number of cattle in the division. This shows that we cannot estimate the virulence of a malady solely by the number of deaths, unless an idea is given of the number of cattle exposed to infection. This must always necessarily be great, when we consider the immense geographical extent of the country, and that the bovine tribe are the usual beasts of burden. Milk and clarified butter are consumed by all classes of natives, and beef by many.

As the diseases still linger in a few villages, I made several visits to the nearest one, and found the form of gootee had carried off thirty animals during the month; not one had recovered; five were still ill in a herd of between 250 and 300, which mixed indiscriminately when grazing, the sick being left at home when no longer able to eat or walk. Although every facility was given to its spreading, it has died out without any treatment or preventive measures. Native apathy and their abhorence of trouble prevented my interference, and the same reasons stopped my making more post-mortem examinations. During my observations, five died, and two that were very ill recovered, which I attributed to a liberal allowance of gruel being given. The symptoms in no way differed from those already described, the crustaceous eruption spread in two days from the head over the whole body; and in those that recovered, the spots from which the crusts had fallen were devoid of pigment, but sprouting with new hair.

I am almost alone in the opinion that the disease is NOT the same as the rinderpest of Russia or the cattle plague of England, 1866. As it is a very important question I hope you, Mr. Editor, will favour the profession with your opinion as to whether either gootee or puschima are identical with rinderpest.

I believe them to be a specific disease, the symptoms of which vary in intensity under particular circumstances,—that it is enzootic as truly a cholera is endemic, and has been well known in the country for very many years.

In the following respects it does not agree with rinderpest—

1st. In its history,—essentially enzootic.

2nd. In epizootics, its limited extension.

3rd. Its disappearance, without stamping out.

4th. It is neither so virulent nor so fatal.

5th. It has been successfully treated.

6th. In the absence of the characteristic symptoms of rinderpest, namely, excoriated gums and palate, with aphthous eruptions. The absence of extravasations of blood, ecchymoses, and hæmorrhages beneath mucous and serous membranes, and the absence of the stomach lesions. On the contrary, the ulcerated intestines indicate a different disease.

There can be no doubt of the many points of resemblance, but the importance of placing the disease as a distinct one of a class cannot be too forcibly impressed, as the measures we would adopt will, in the one case, be treatment, arrest, and care, and in the other, if we consider it is rinderpest, extermination by the stamping-out process is our only hope of success. This, for political reasons, could not be thought of in India. Hence the importance of duly considering the subject.

As the malady has existed for months near Calcutta, there can be no doubt diseased hides salted for preservation are being largely shipped to England. Does the salt or the time required in transit prevent the importation of the disease?

Writing these notes has been some occupation to me during a few weeks' sick leave, but I hope my remarks, even if they seem premature from my having seen so little of the disease, may not be deemed entirely useless.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 905, *vol.* xlii.)

It was our intention to have discussed the subject of fairy rings in this paper, but as some experiments are still pending it will, perhaps, be as well to leave the matter until we arrive at the end of the Fungales.

We now, therefore, give a few examples in completion of the list of edible fungi; these in the present paper belonging to different natural orders distinct from those of the genus Agaric, namely:

1. *Cantharellus cibarius*—The yellow Chantarelle.
2. *Boletus edulis*—Boletus.
3. *Morchella esculenta*—Morel.
4. *Lycoperdon bovista*—Giant Puff ball.
5. *Tuber cibarium*—Truffle.

It will be observed with regard to this list that their trivial names for the most part denote their food characteristics, and it may be remarked that we have chosen only the species here indicated as illustrations, admitting at the same time that other species of each genus may be equally good for food.

1. The Chantarelle is distinguished from the Agarics in that in the latter the gills are distinctly separable from the flesh, while in the former they are folds of the flesh of the fungus, and not separable. The whole plant is of a buff yellow colour, easily distinguished, as it occurs gregariously in our woods. We have met with it in the greatest profusion in the woods of Cotteswold country, whence we have abstracted many a delicious meal of them.

The Rev. M. J. Berkely, in 'Hooker's Flora,' vol. ii, speaks of it as follows:—"Smell very agreeable, like that of ripe apricots; taste agreeable, but pungent. This species forms, according to Bulliard, a main article of food in some districts of Europe, though dangerous when eaten raw. It must not, when sought for that purpose, be confounded with the *C. aurantiacus*, which is reckoned unwholesome, if not poisonous."

The taste, smell, and appearance of the juices of the edible Chantarelle, as well as of the orange one are, indeed, much like those possessed by the apricot, and hence it forms, when cooked, a most elegant-looking dish.

Dr. Badham says:—"No fungus is more popular than the above, though the merits, nay, the very existence of such a fungus at home is confined to the Freemasons, who keep the secret! Having collected a quantity at Tunbridge Wells this summer (1847?) and given them to the cook at the Calverley Hotel to dress, I learnt from the waiter that they were not novelties to him; that, in fact, he had been in the habit of dressing them for years, on state occasions, at the Freemasons' Tavern. They were generally fetched, so he said, from the neighbourhood of Chelmsford, and were always well paid for."

The learned doctor says that "the best way of cooking the Chantarelle are either to stew or mince it by itself, or to combine it with meat or with other funguses." We, however, prefer to have them simply buttered and roasted before

the fire, or they may be fried with slices of fat bacon, but minced with meat they make an elegant and highly savoury dish.

Since Badham's time this and other edible fungi have been better known. A prize is annually given by the Royal Horticultural Society for the best collection, and Dr. Bull, of Hereford, and the members of the Woolhope Naturalist's Field Club not only busily collect the fungi in their district but publish excellent papers upon them.

2. The genus Boletus is distinguished from the foregoing by having *tubes* separable from the cap. The flesh of most of the species is of yellowish hue, in some changing to indigo on being handled. The *B. edulis* has quite white flesh, it is one of the largest edible fungi. It sometimes occurs in woods of oak and pine, and we have gathered it sparingly in beech woods.

This is one of the most delicately flavoured of our edible fungi. As Dr. Badham observes:—"It imparts a relish alike to the homely hash and dainty ragout, and may be truly said to improve every dish of which it is a constituent, "nihil quod tetigit non ornavit." Berkeley, too, praises its flavour.

Persoon gives the following method of cooking this dainty:—

"It may be cooked in white sauce, with or without chicken, in fricassee, broiled or baked with butter, salad oil, pepper, salt, chopped herbs and bread crumbs; to which some add ham or a mince of anchovy. It makes excellent fritters; some roast it with onions (basting with butter); as these take longer to cook than the Boletus this must not be put down till the onions have begun to soften."

Again, Paulet gives the following recipe for *Boletus edulis* soup:—

"Having dried some boletuses in an oven, soak in tepid water, thickening with toasted bread, till the whole be of the consistence of a pureé, then rub through a sieve, throw in some stewed boletuses, boil together, and serve with the usual condiments."

For ourselves we prefer to have the fungus denuded of its peel and gills, treated with butter and pepper, and cooked in an oven, with a tumbler or cover to keep in all moisture placed over each; cooked in this way it is, indeed, "a dainty dish to set before a king."

3. The Morell has a conical head, the exterior of which is folded into more or less hexagonal locculi; this, which is hollow, is supported on a hollow stem much like some mush-

rooms; when once known it can never be forgotten. It is usually found in May and June, beneath thick groves of taller fir and beech trees. Speaking of the qualities of this fungus, Cooke, in his 'Plain and Easy Account of British Fungi,' says:—

"The Morel is chiefly employed in this country in the dried state as seasoning for soups, in which state they are imported, The ordinary retail price is from one shilling to eighteenpence an ounce.

"Although only employed here in its dried state for seasoning, it is far more delicious when fresh, and affords a liquor of much more exquisite flavour than the ketchup of mushrooms. The demand was formerly so great for Morels in Germany that the peasantry were induced to burn down the woodland in immense tracks, on account of the more productive nature of burnt soil, until legislative enactment put an end to the practice."

The finest specimens we have ever seen were gathered by us in Earl Bathurst's Park, at Cirencester, beneath a group of fir trees, and we have procured some good specimens from one of our own orchards in Dorsetshire.

From both localities we have enjoyed good dishes of this our favourite fungus. The plant is not uncommon in the Cotteswold district, and we found that a greengrocer in Cirencester always had some on sale in their season, and were informed that Lady Georgiana Bathurst gave directions to have some sent to the mansion when they were found. The militia mess, too, was regaled with these for a season, and they were greatly approved.

Our methods of cooking have usually been to fry with a little broth and thin slices of ham, seasoning with pepper and salt; a squeeze of lemon juice brings out the flavour. But the best dish is formed by filling up the hollow cap of the fungus with veal or forcemeat stuffing, and then fry with thin bits of bacon.

4. The Puffballs are too well known to need description. In the ripe state, when the brown sporules issue from a fracture which occurs on the apex of the *peridium* they are known by the name of the Devil's Snuff box. In this condition, or an approach to it, the fungus is useless as food, but if when the lesser species have their whole substance white as small snow balls, or when, as in the larger form, the *Lycoperdon bovista,* or Giant Puff ball, it reminds one both in size and colour of a purely white wooled lamb coiled up; they are all edible.

The latter, however, is to be preferred, and when, as we

have often done, we have marked down a specimen, over three pounds in weight, it has served us for several feasts, as it has afforded us an opportunity of taking off slices day by day for a most delicious repast.*

Cooke says of it, "Very few persons are, however, aware that when in its young and pulpy condition this *Lycoperdon* is excellent eating, and, indeed, has few competitors for the place of honour at the table.

It is especially esteemed in Italy, and should be with us, not only on account of the impossibility of confounding it with other species, on which account the repast may be enjoyed without fear, but also for its own intrinsic value."

Mrs. Hussey (no mean authority on this subject) recommends that each slice be dipped in the yolk of an egg, and sprinkled with chopped sweet herbs and spice. "Then," she says, "they are much lighter and more digestible than omelettes, and resemble brain fritters."

We prefer them simply sliced, and covered with egg and bread crumb, and fried, like a veal cutlet, in which state the flavour is, indeed, most delicate, and the substance so tender that it "melts in the mouth."

5. The Truffle was, perhaps, the most anciently known as an edible and flavouring substance of all the fungi. They occur as warty-looking nodules, amid decaying leaves, in beech and oak woods, just beneath the surface of the soil. The chief supplies for the tables of the rich are obtained from the Continent, but our own woods afford them in occasional profusion. We are informed that in parts of Hampshire truffle dogs, *i. e.* dogs trained to hunt truffles, are still to be met with about the New Forest. Kromholz, according to Cooke, gives the following instruction for the benefit of those who would undertake the search:

"You must have a sow, of five months old, a good walker, with her mouth strapped up, and for her efforts recompense her with acorns; but as pigs are not easily led, are stubborn, and go astray, and dig after a thousand other things, there is but little to be done with them. Dogs are better; of these select a small poodle."

We have been told that formerly dogs were kept to hunt truffles in Oakley Park, Cirencester, where we have found

* Since writing the above we have met with the following note:—Vittadini recommends, wherever this fungus grows conveniently for the purpose, that it should not be all taken at once, but by slices cut off from the living plant, care being taken not to break up its attachments with the earth; in this way, he says, you may have a fine "frittura" every day for a week.

them, but of late years the strict preservation of game has led to the discountenance of dogs in the beech preserves, and so we rear the foreign pheasant, but buy the foreign truffle in the latter case to the neglect of our native species.

We now bring our remarks upon the edible species of fungi to a conclusion; we have seen how much of human food this tribe of plants are capable of affording. It is just possible that the vast quantities of the different species we meet with in our woods and fields might even be utilised in feeding animals. Experiments with pigs might lead to useful results, but as it is at present fungi mostly subserve the purpose of harbouring and nourishing hosts of flies and other insects.

CASE OF EXTRUSION OF THE BLADDER IN A MARE DURING PARTURITION.

By Mark Tailby, M.R.C.V.S., Birmingham.

On Tuesday, the 27th of April last, I was requested to attend a well-bred chestnut cart mare, aged six years, the property of Mr. Cooper, of Langley, near Birmingham.

She had foaled unattended on the previous Sunday morning, and when seen a large protrusion from the vulva was discovered.

The report I received was that she had "put her womb down," and had great difficulty in staling.

Upon my arrival I found my patient in great pain, pulse 85, hard, and regular, breathing very much accelerated, bowels constipated, tremors, especially in the hind quarters, great difficulty in moving from side to side, and occasionally lying down and getting up again.

The protruded viscus, supposed to be the womb, I found to be the bladder, as evidenced by the trickling from the ureters, and by the fact that there was no obstruction to the passage of the hand into the uterus.

The ashy-grey colour of the vesical mucous membrane indicated a gangrenous condition, which might be expected from so protracted a displacement (more than 48 hours). Owing to the all but hopeless difficulty of returning the bladder, and, supposing this difficulty surmounted, the possibility of some acute or chronic ailment supervening, added to which nine drachms of aloes had been given to her before I saw her, I gave a very unfavorable prognosis.

Having no assistance, and no means of casting her, which I considered indispensable, I returned home, a distance of nine miles, and consulted a medical friend (A. Oakes, Esq., M.R.C.S.), who took great interest in the case, offered many valuable suggestions, and more than this, gave his personal assistance. We arrived about 7 p.m., and found the mare so weak that I thought it advisable, with assistance, to again try the reduction without casting, but she strained so violently that we quickly desisted.

With great difficulty she was led, tottering as she went, to the straw yard, where we cast her.

I then grasped the fundus and as much of the body of the bladder as I could, and persistently applied gentle pressure with three fingers upon the mouth of the urethra, when, to my great delight, whilst the mare made a slight struggle, I felt a good portion of my embarrassing handful recede; now came another difficulty, that of pushing my hand forward, enveloped as it was by vesical folds, and subjected to the contractions of the urethra and the straining efforts of the mare; also the difficulty of withdrawing it, without the returned portions of the bladder, which lay just within the urethra following; when my friend, using my hand as a director, introduced his left hand, and pushed the whole of the viscus into its normal position, wondering where the whole of his arm had gone.

I then injected the uterus, vagina, and bladder with diluted carbolic acid (1 part to 60 of water made tepid). The mare was then raised, and carefully helped into the box.

I gave two ounces tincture of opium, with four ounces of whiskey, and ordered mash diet, warm clothing, &c.

On the 28th I found her lying full length in the box, the tremors of the limbs continuing, slight perspiration, pulse 80, and weak, respirations 40, and membranes healthy looking; has eaten a little green food and hay.

Repeat opium and whiskey, and inject bladder with decoction of poppy heads and fresh barm.

29th.—Patient looking much more composed and cheerful, body and extremities warm, tremors much abated, pulse has risen to 98, soft, and weak, respirations 32, appetite slightly improved, voids a pint of urine of good colour frequently in the day, without pain; has passed a large quantity of dung, and is upon the whole decidedly better.

To repeat treatment, with friction to extremities.

30th.—Symptoms much the same as yesterday, pulse 80, and soft, appetite improved, tremors quite subsided, and moves with much more freedom.

Treatment to be continued.

May 1st.—Still about the same, pulse 80, and soft, appetite improved, and bowels moved.

Treatment repeated.

2nd.—Pulse 65, fuller and stronger, respirations quiet, appetite vigorous, can walk around the box freely, and has passed three pints of urine at one time.

Medicine discontinued. Ordered the poppy head injections to be continued, and to put the foal to her.

7th.—Great improvement, with full secretion of milk.

14th.—Discharged convalescent. Ordered her to be turned out to grass with the foal three or four hours daily.

Both have continued to do well.

I have been induced, Mr. Editor, to forward this case for publication, as it has been exceedingly interesting to me, and I thought it might be of some interest to the profession, because so few cases, and those not successful (so far as I am aware), have been recorded.

I shall be glad to hear of other cases successful or otherwise.

I hope it will not be at the risk of a charge of needless prolixity that I have given the details at full length, as I humbly believe that nothing was done which should have been left undone, and that every measure used contributed to the satisfactory conclusion of an anxious and critical case.

PARTURIENT APOPLEXY IN A SOW.

By W. Hamley, Penzance, M.R.C.V.S.

Should you deem the following case worthy of an insertion in the *Veterinarian* it is at your service. I should not have sent it you had not my memory, by its occurrence, called to mind the statement of a student whilst a group of us were discussing the treatment, &c., of the disease, to the effect that he had seen two well-marked cases of the disease in the sow. I sincerely trust that the individual who communicated the information has long since learnt not to despise so humble a patient for treatment.

On July 30th, 1869, I was requested to attend a sow, the property of Mr. J. C. Osborne, of Trevorian, distant from here about four miles.

Symptoms.—She was lying full length on her right side, in a semi-comatose state, breathing heavy, accompanied with

a snore, pupils widely dilated, and a discharge of frothy saliva from mouth, bowels constipated; total loss of milk in posterior glands, and but very little in the anterior ones. The owner informed me that she had pigged the previous evening, and when left for the night appeared all right and very comfortable; but, on visiting her early in the morning, he found she had not eaten anything, and that she appeared to be very unwell. On trying to move her he observed that she staggered just the same as cows did in the early stage of reel (*i.e.* the local term for dropping after calving), soon after which she fell, and was unable to rise.

Treatment.—Give very cautiously, Ol. Ricini ʒvi, Pulv. Jalapa ʒij, Pulv. Gent. ʒj, Pulv. Potass. Nit ʒj, Sulph. Sublim. ʒss, and repeat same if bowels do not respond in eight or ten hours.

July 31st.—Patient about the same. Repeat medicine and well stimulate the loins. Requested that I may hear how she was in the evening. At this time a messenger came to tell me she was up on her legs, and her young ones sucking. The bowels had not, however, responded. Sent double quantity of the powders, half for dose to be given in her food. I heard nothing more of my patient other than she did well.

I would add she had had a portion of her tail incised in order to bleed her.

SPASMODIC COLIC.

By Thomas James Poulton, M.R.C.V.S., Wrotham.

Prominent among the diseases of the digestive system of the horse undoubtedly is colic. The severity of the symptoms present, and the number of cases which annually occur cause me to pen this article.

As a rule, diseases of the equine race abound in names, more or less antiquated, some having as many as six different ones. The names applied to them are mostly derived from roots, affixes, or prefixes of ancient or modern languages. Spasmodic colic is felicitiously abundant in them; thus by some it is termed fret (A.-S. *fretan,* to gnaw); others gripes (A.-S. *gripan,* to seize, pinching distress); and nearly all colic (Gr. *kolon,* signifying acute pain of the bowels). Among the scientific names it receives is intermittent colic (Lat. *inter* and *mitto,* causing to go, ceasing at intervals); and spasmodic colic (Fr. *spasme,* Lat. *spasmus,* Gr. *spasmŏs*—

spas, to draw; an irregular, violent, and involuntary drawing or contraction of muscles). The two latter may be said to define the malady in a precise, satisfactory, and scientific manner.

Cases of colic usually occur in horses engaged in hard work, as cart horses, heavy draught horses, and coach horses; while, on the contrary, those animals which are well fed, well groomed, well stabled, and well cared for, very rarely become affected with it. Now and then, however, we are called in to attend a case of this description, and we generally find it is the result of some oversight in the usual routine of the stable. We ought to impress this fact on the owners, as it would, doubtless, tend to inculcate a better system as far as regards their stable management.

The causes which give rise to this affection are as various as the names by which it is known. Cold water given when the animal is heated is one of the commonest. Certain streams or ponds seem to possess *per se* the power of producing it. As an illustration, the water on one farm, either well or pond water, produces it; the farmer informed me that he had lost twelve horses within the last four years. Another farmer has a stream running at the back of the stable, and if the horses drink any of it a case of colic, and a very rapid and fatal one, is sure to result from it. Indeed, in both instances, they seem to have a tendency to run rapidly to a fatal termination. But if the water on either of these farms is allowed to remain in tanks for, say twelve or twenty-four hours, the water can then be given with impunity. Hard water, too, is a frequent source of it.

If when a horse is heated and exposed to the cold air to dry him, or cold water is suffused over him, he is liable to be seized. Green meat, too, which at certain seasons of the year may be said to be the greatest renovator of the horse, is liable to produce it. Cases, too, occur after the exhibition of a powerful dose of physic. Again, some animals, from the peculiarity of their systems, seem predisposed to it; and it usually happens that after a succession of attacks one more severe terminates his existence. Anything which has an irritating effect, either on the stomach or intestines, is liable to produce it, as crib-biting, calculous concretions, worms, &c. &c. Another cause is placing the animal in a stall, and keeping him tied up without any exercise. This, too, will be a fatal case. If worms exist in any great numbers, be they tapeworms (tænia perfoliata), or the long round ones (ascaris lumbricoides), death is almost certain to follow.

Symptoms.—The animal, as a rule, gives no previous indications of its approach. We have neither any indications of fever, nor any variations of the pulse. At first he appears uneasy in his stall, shifts his feet, looks round to his side uneasily, and makes frequent efforts both to micturate and fæcate, not always successfully; if so, the urine is small in quantity, dark in colour, and highly ammoniacal, sometimes viscid; while the fæces will be dark in colour, hard in consistence, and mostly coated with mucus, sometimes small in quantity, and frequently voided. After this he will bend his knees, crouch his back, and after being a short time in this position falls.

He now looks round to his side, paws and strikes out with his fore and hind feet, lies down, and tries to throw himself on his back, and if successful rests in that position for a minute or two, which appears to give him great relief. Now, perhaps, he will get up, shake himself, and commence to eat, but it is only a feint, as recurrence of the symptoms soon follows.

In most cases a favorable result succeeds after the patient has been attacked for an hour or so; when the severity of the symptoms will be noticed to subside, the intervals of ease to increase in duration, and he speedily regains convalescence.

If a fatal termination be the result, the exacerbations become more severe, and the intervals of ease become shorter in their duration, until they are no longer discernible. The animal now looks anxiously and haggardly at his flanks, surface of the body is bedewed with a cold perspiration, he gets up and down frequently, and the pulse, which up to this period was unaltered both in frequency and force, now becomes quickened and hardly to be felt. Then phrenitic symptoms supervene, tympany and torpidity of bowels; this torpidity lasting throughout the disease. Shortly after death closes the scene.

Cases now and then occur in which the animal continues to have intervals of ease for a much longer duration, and the severity of the symptoms are, to a great extent, modified. He will lie down, look round to his side, then get up and eat for a brief period until the recurrence of the pain. I have known these cases to last two or three days, and then ultimately either to recover or die. In this phase they will take any amount of physic or any other drug with impunity; indeed, I have heard veterinary authorities say that they will swallow an apothecary's shop.

Treatment.—Quot homines tot sententiæ may not without

truth be applied to the treatment which is had recourse to. In a great many instances the affection ends in resolution without the administration of any medicinal agents, and it is a well-known fact that nearly every one who makes any pretensions to horse management (and in these days who does not?) has his specific. In the old coaching days, which we are wont to hear so much of, gin and pepper was the popular remedy, and even in the preseut day a great many have recourse to it. We use agents of a stimulant or sedative—diuretic or cathartic class. It appears that agents possessing either of these qualities seem to have *per se* antispasmodic properties.

In practice it will always be best to thoroughly diagnose the case, and if we feel certain there is any retention of urine, depend upon it it is the best practice to introduce the catheter (after it has been lubricated) up the urethra and draw off the contents of the bladder. I have noticed that after the removal of the urine a certain relief has resulted, which will materially assist in the recovery of the patient. Afterwards the following draught will be found beneficial:—

℞ Ol. Tereb., ʒiv;
Tr. Opii, ʒj;
Aqua, ʒviij.
Misce.

After this, backrake him well, have a cloth thrown over him, and let him be placed in a well-ventilated, well-littered loose box, and left to himself for an hour. If at the expiration of an hour no relief is obtained, I would advise a clyster to be thrown up, and a draught which I usually administer, composed—

℞ Tr. Opii, ʒij;
Sp. Eth. Nit., ʒij;
Aqua, ʒviij.
Misce.

Sometimes I give ʒss of the Gum Opium instead of the Tr., which I find equally answers. In the *Veterinarian*, vol. xxxv., p. 326, Professor Brown speaks highly of Tr. Aconite in small doses every three or four hours, and whenever I have used that drug it has in nearly every instance had the desired effect. I do not give the drug in small quantities, as the great constitutional disturbance which is set up by the disease calls for a potent remedy, which must have an immediate and certain effect on the pulse. I therefore have given Fleming's Tr. Aconite flɱxxv, and have found better results than from the opium; in a word, after

opium the horse seems sleepy, but after aconite he is able directly to undergo physical exertion, there being no head symptoms. I may here say that although I am fond of opium, and give it alone, I have seen no costiveness result from its exhibition. I, too, have used the tobacco fumigator with not very decided results. Very rarely do I lose a case from spasmodic colic; and this I attribute to the mode of treatment pursued. When, however, a fatal result does happen, it will be traceable more to the existence of worms than to any other cause, and in this only when they exist in such large quanties as to bring the patient into an anæmic state of body.

In contraction of the involuntary muscles of the intestines, we find the blood-vessels in a constringed state; therefore, the treatment which must suggest itself primarily to the thinking mind is the administration of a stimulant. Heat and enlarged blood-vessels are its effect on the intestines, and the cramp is quickly overcome.

Should the stimulant fail in its effects, a sedative must be had recourse to (as intussusception is liable to ensue), which will tend to quiet the nervous system, and produce relaxation of the involuntary muscles of the body, which is the *sine qua non* to success. I make it a rule never to have recourse to phlebotomy. The state of the pulse which is normal does not indicate it, and where it has been satisfactorily had recourse to it takes some time before the patient becomes thoroughly convalescent. Even then it is often noted cold sweats will frequently occur; he will be found less able to undergo physical exertion, and will frequently become predisposed as it were to the disease. After that exhaustion comes on as death approaches, and if we, by bloodletting, hasten on artificially that exhaustion, it will become no wonder that frequently cases will slip through our hands. To my mind sedatives supply the place of venesection, as after their effects have subsided the animal reassumes a tranquil state. Unfortunately we do not allow nature to have her voice in it, as it will be found in a great many instances. She possesses *per se* the power of arresting the disorder. I, too, have noticed that when I have had recourse to venesection the number of deaths over recoveries have greatly increased.

Cadaveric lesions.—On making an autopsy the contents of the thoracic, pelvic, and most of the abdominal viscera present a normal appearance. There is no inflammatory action present to account for the severe pain which the subject laboured under; there is not even increased vascu-

larity. There will only be seen a portion either of the ileum, or the jejunum very seldom, the duodenum about four to six inches in length contracted. The contracted portion looks very white, and sometimes the contraction will be so severe as to have produced intussusception. This contraction is not always kept up after death; when it is, the part feels knotty. To a non-professional it seems strange that there should be nothing more visible to account for death; but such, however, is the fact. When large quantities of worms have caused death, the small intestines will not, as a rule, be found in this cramped state, but they will mostly be found in the cæcum, and that organ will be noted to be in a highly inflamed state.

Cases of this description ought never to have been confounded with colic, as they have a tendency to mislead both the amateur practical veterinarian.

THE WANT OF VETERINARY MEDICAL ASSOCIATIONS IN THE SOUTH.

By the Same.

It is a notorious fact that veterinary surgeons living in the metropolis and its subjacent counties possess fewer means of intercommunion than their brethren at any distance from the capital; and, as the result, we find they are less sociable with each other, and more distrustful. It is true there are numerous gentlemen, in every sense of the word, who have attained popularity by their talents, their address, and their unceasing devotion to their professional pursuits, who yet lack this one and indispensable qualification. Surely this is not as it ought to be; we have been taught together at our colleges, have been examined by our examiners, and yet we have not the moral courage to help a brother when any of the vexations of the profession occur to him. Again, we have the same difficulties to contend with, the same hopes, and fears, and community of interests. Why should we not, from being as at present a heterogeneous mass, become a homogeneous one? It only lacks the will. At the present moment great changes are taking place, and it behoves us all to make an effort to raise ourselves in the estimation of the public. Let each unitedly put his hand to the plough, and endeavour by all the means in his power to carry the Veterinary Bill, which we have not heard of for a long time. But,

before we do that, let us come to arrangements with the Edinburgh Veterinary College, and heal the wounds which for so long a time have existed. Then we shall have the united sympathy and support of the entire profession. If such should happen to be the case, no opposition which could then be brought against the Bill would be able to stand. Without any disparagement to our existing Council, I think those gentlemen who are wont to attend the annual meeting might now and then select members both Irish and over the border, for as the Board has existed up to the present time, it is only an English one. Besides, as members are at present elected, it seems as if a councilman's office was to be held for life. Let us then infuse new blood from the three kingdoms, and we should find, as a matter of course, that we have gained new life and new energies, which would be found to be more in harmony with the best interests of the profession.

Another effort in the right direction will be the formation of veterinary medical associations in London and surrounding counties. It is true we have one in London in connection with the College; but what we want is one governed by ourselves, and independent of college control. It will be sure, when established, of being well attended, as it will be the representative of metropolitan talent. It will be found to confer a great boon on every member who attends it, as when the intellect of the district is drawn together in the discussion of diseases which we meet with in every day life, and the different opinions explained, good is sure to result.

Although I have only attended the London Association, I believe no one can go home without being impressed with the conviction that he has derived benefit. Thoughts new to him will suggest themselves to his mind, and it will become a pleasure to him to try to unravel their mystery. We shall know we are students now, and that we owe to ourselves and the profession at large any little information which it is in our power to bestow.

After locating myself at Gravesend, I became impressed with the conviction that a society for Kent might be established. Meeting Mr. J. B. Martin, M.R.C.V.S., Rochester, one day, he hinted that he thought one might be formed for Kent. But from some cause or other it fell through, although two or three promised to become members. I confess, as far as I am concerned, I thought some older member than myself ought to take up the subject, and should he do so, I promise him every assistance. Let us then be up and doing, the materials are already at hand, only lacking the managing hand to

set them in order. There are things which demand our attention in the formation of these associations besides the reading of papers, which must have a great effect on the future of veterinary science. The development of these questions must come after their establishment. I do not believe we shall ever pass our Bill until the profession, through its associations, join the colleges, and by showing the injustice we labour under, force Parliament to grant us our right. We may depend upon it we must agitate this question if not exactly from the stump.

THE VETERINARY PROFESSION IN INDIA.

By a local Veterinary Surgeon.

The letter of "Centaur" in your periodical for August is a step in the right direction, and it is to be hoped will not pass unnoticed by Indian local veterinary surgeons.

The question is a very serious one to us, and the fault very much our own, for allowing so long a period to pass, and so many supercessions to take place without notice.

The last War Office Gazette received in India notices the promotion to first class of two junior men of session 1858. What have these young men done more than their seniors, who can almost count year for year of service to their age? Yet it is not their good fortune I find fault with, but with the injustice towards us, whose only fault, as "Centaur" says, lies in their being members of a local service.

The question does not bear analysing, for young men that formerly belonged to the Indian establishment, and since elected for general service, have passed over our heads. These were children at school when some of us were assisting in the struggles on the frontiers of India.

"Centaur" proposes a remedy, one I think both feasible and just; and as we have a precedent for it in the Medical and Staff Corps, it cannot be said that it is an innovation. The two services just mentioned (Staff Corps and Medical) owe their present status to the forces brought to bear by them on the legislators of our country. The same path is open to us with precedent and justice to back it.

"Centaur" calls on the service to agitate; by this he means to petition either the Secretary of State for India, or War; perhaps the latter would be the better channel, as it

would be referred to that functionary, and time would be saved by sending it direct.

Let all those who have a grievance send in a separate petition, say in January next, clearly defining their individual case, adhering strictly to facts, and written in temperate language.

As our grievances are of long standing, let us pray for retrospective promotion to be regulated according to individual supercession.

Yours faithfully.

TWO CASES OF ABSCESS IN THE THROAT.

By Charles Grey, Veterinary Student.

During the time I was a pupil of Mr. G. Harris, Veterinary Surgeon, Sawbridgeworth, Herts, the following cases came under my notice, and if the Editor of the *Veterinarian* considers them worthy of insertion in his valuable journal, I shall feel gratified.

Case 1.—In the summer of 1868, Mr. Harris was requsted to attend a young bull, belonging to Mr. C. Barnard, of Harlow. The animal had been turned out in the usual way.

Diagnosis.—Pulse and breathing accelerated; difficulty in swallowing, arising from a sore throat; a rumbling noise in the larynx, which could be heard at a distance of several yards. The animal fed tolerably well at first, but his appetite diminished as the case advanced; rumination was not altogether suspended. The throat became considerably larger, so much so that, just before he was killed, he was in imminent danger of being suffocated, from the weight of the abscess on the larynx. His nose was protruded, and he looked very anxious. We did not see him from the commencement of the attack.

Treatment.—As the animal was low we gave tonics and stimulants twice a day; applied a stimulating liniment to the enlargement, with a view of hastening the formation of the abscess, so that it might be opened; had a bran poultice kept on night and day. I ordered him to have linseed tea to drink, and anything he could fancy to eat, in the way of *soft food.* As the administration of the draughts caused him great discomfiture, we discontinued them, but still dressed the throat. Latterly applied Ung. Hyd. Biniod. after dressing with the liniment.

The case continued this way for about three weeks; we could not get at the abscess externally, and the animal would eat but little, so the owner had him destroyed.

Post-mortem.—We found the swelling to be an abscess; it was ripe, and pointing in an anterior direction, situated on superior part of larynx; it weighed four pounds seven ounces. The weight must have been nearly sufficient to collapse the larynx.

Case 2.—The subject of this was a milch cow, and belonging also to Mr. C. Barnard. She had been out at grass. The cowman had noticed her making a roaring noise for some weeks before Mr. Harris was requested to attend her.

Diagnosis.—Found the throat enlarged above the larynx, and it felt like a chronic thickening; she made a roaring noise, but her breathing was not much interfered with at the commencement of our attendance, but became more so towards the end of it. She fed tolerably and ruminated.

Treatment.—Applied the Ung. Hyd. Biniod., which relieved her to some extent, but the owner decided to have her killed.

Post-mortem.—The enlargement proved to be an abscess, but not so ripe as the bull's was. It weighed two pounds six ounces, and was situated above the larynx.

Remarks.—In the course of the intensely hot summer of 1868 we had a number of similar cases to those already described. Surely the heat must have had something to do with this form of disease, either *directly* or *indirectly;* the latter seems the most probable, for the grass was dried up to such an extent that it neither possessed the nutritious qualities of grass or hay; however, things were turned out as usual; so long as the owners felt comfortable, they, in many instances, seemed to think little about the quantity or quality of the food their stock had to eat, so long as they existed (I am not now alluding to these two cases, but to others which came under my observation).

As poverty of the blood is conducive to the formation of abscesses, it would seem highly probable that the heat had *indirectly* to do with the number of cases we had.

My principal reason for recording these cases is, because I have not seen any of the same description mentioned in the *Veterinarian*, as arising from the same cause, viz. the hot summer of 1868.

Pathological Contributions.

CANCEROUS DEPOSIT IN THE LIVER AND SPLEEN IN THE DOG.

We are indebted to Messrs. Gowing and Son for the particulars of two remarkable cases of cancer affecting the internal organs of the dog. In each case the animal was aged, and in a hopeless condition when first seen by Messrs. Gowing, consequently no treatment was attempted.

Post-mortem examination was made soon after death, and the appearances satisfactorily explained the condition of the dogs during life.

In the first case, which was examined in the beginning of October, there was a large nodulated tumour, of a pale greyish-yellow colour at the root of the mesentery. Numerous deposits of a similar character were found all over the liver, both covering the surface, and extending to the interior of the gland.

Under the microscope the deposit was found to consist of cells of various forms, caudate, spindle and fibre-cells, with many others containing nuclei, and evidently multiplying by the endogenous process.

A considerable quantity of fine fibrous stroma gave to the deposit a density and hardness characteristic of scirrhous growths. There was scarcely a trace of the milky juice which is an invariable constituent of encephaloid tumour.

The second animal presented appearances in some respect more marked than those which have just been described. The subject of the disease was a Maltese dog, aged fourteen years, which was seen by Messrs. Gowing only a few hours before its death.

On *post-mortem* examination the liver was found to be covered with yellowish spots, and a tumour of similar character was detected in the spleen.

Microscopic examination of the morbid deposit resulted in the detection of the same elements which had been observed in the former case.

No history was obtained in either instance, but there can be no doubt that the primary deposit occurred in the mesentery in the first case, and in the spleen in the second, and that it was followed in both by cancerous infiltration into the structure of the liver.

CATTLE PLAGUE.

Since our last report on this disease, information has been received of its appearance, in a very severe form, in many places in the western and south-western districts of Poland, near to the Prussian and the Austrian frontiers, and also of its entrance into Silesia. Every animal attacked is said to have died; six hundred having succumbed in one small circle alone. On November 27th the Polish frontier was closed, and a military guard appointed by the government of Silesia to prevent the further entrance of any cattle, or things likely to bring in the infection; the progress of the disease having been distinctly traced from the circle of Kielce to Jedrzejow and thence to the town of Pilica. Despite the precautions employed, the disease extended from Pilica to Sohrau, in Silesia, distant about fifty-seven miles from Oppelm; the great centre of railway communication. The extent of the loss in Silesia has not yet reached us, but we learn that the authorities had used every means for the speedy extermination of the disease. Cattle fairs and markets had been suppressed, and all the prescribed quarantine regulations strictly enforced.

Besides this extension of the plague into Silesia, the malady has assumed very serious proportions in Buckowina and Galicia, and is still prevalent in the district of Pesth, Hungary.

PLEURO-PNEUMONIA.

This disease has undergone no diminution either in Great Britain or Ireland since our last month's report. Indeed, there is an increase in the number of places in which the disease exists in England. With pleuro-pneumonia, as with other contagious diseases of cattle and sheep, the want of combined action on the part of the local authority, together with the mistaken policy of appointing policemen and other inefficient persons as inspectors, is beginning to have its effect.

Until more energy is displayed in carrying out the law in a vigorous and proper manner, we can scarcely hope for any abatement in number of cases of pleuro-pneumonia. An unrestricted trade in diseased animals in Ireland, and a total neglect of supervision over the exportation of cattle to England and Scotland from that country, are things not promising much good for the future.

FOOT AND MOUTH DISEASE.

The decline of the foot and mouth disease, to which we called attention in our last month's issue, appears to be fully confirmed, so that a good hope may be entertained that the country has seen the worst of this remarkable outbreak. The centres of the affection have fallen to 2300, being 300 less than the corresponding period of last month; and a similar diminution has taken place in the number of fresh outbreaks. Some counties are altogether free of cases, while in others the disease exists in only some isolated places. With comparatively few exceptions, also, the cargoes of foreign cattle which arrive at our several ports are found to be healthy.

The statement that the outbreak of the disease in the Agricultural Hall, on the day succeeding the Smithfield Club show, was due to some foreign cattle, which arrived at Maiden Lane Station shortly before a train from Birmingham containing animals for the show, is so opposed to all the facts of the case, that we can only suppose it must have had its origin in some one who is unwilling to lose any opportunity of attempting to fix every outbreak of disease upon foreign imports.

SMALLPOX OF SHEEP.

We learn that sheep-pox still prevails in the neighbourhood of Stettin, and other parts of Pomerania. It has also broken out on several farms in Mecklenburg, and fears were entertained of its further spread.

SCAB.

We hear much of the increase of scab, both in Great Britain and also on the Continent. The returns under the Contagious Diseases (Animals) Act, which we publish, shows that two cargoes of sheep suffering from this troublesome cutaneous disease have arrived in this country, one from Antwerp, and the other from Aarhuus, in all 524 animals. In both instances the sheep were killed at the place of import. We further learn that in the first week of December there were 188 centres in Great Britain from which the disease might spread. In Lincolnshire thirty sheep belonging to one person have died from the injudicious use of mercurial ointment for the cure of scab.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the number of foreign animals brought by sea to ports in Great Britain, which on inspection on landing, within the month of November, 1869, have been found to be affected with any contagious or infectious disease, specifying the disease, and the ports from which, and to which, such animals were brought, and the mode in which such animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Antwerp...	Goole	Sheep-Scab ...	...	278	...	...	278	278
„ ...	Newcastle-upon-Tyne	Foot-and-Mouth .	...	26	...	...	26	26
Aarhuus...	Leith ...	Sheep-Scab ...	...	246	...	...	246	246
Hamburg .	London ...	Foot-and-Mouth .	38	59	...	...	97	97
„ ...	Hartlepool	„	58	38	...	...	96	96
„ ...	Newcastle-upon-Tyne	„	17	48	...	...	65	65
Harlingen.	London ...	„	...	20	...	...	20	20
Nieuwe Diep	London ...	„	...	37	...	...	37	37
Rotterdam	London ...	„	1	23	...	...	24	24
„ ...	Harwich...	„	...	11	...	...	11	11
Tonning...	London ...	„	19	...	...	...	19	19
Total ...	... ...	Foot-and-Mouth .	133	262	...	...	395	395
„ ...	... ...	Sheep-Scab ...	...	524	...	...	524	524
	Total ...		133	786	...	...	919	919

"ALEXANDER WILLIAMS,

"Privy Council Office, Secretary.
"Veterinary Department, 13th December, 1869."

Facts and Observations.

Grant of the Royal Agricultural Society to the Royal Veterinary College.—At the meeting of the Council of the Society, December 8th, Lord Bridport (Chairman of the Veterinary Committee), having presented the usual annual report, Mr. Jacob Wilson drew the attention of the Council to the question of the equivalent which the Society obtained for the annual grant of £200 to the Royal Veterinary College.

After a conversation, it was resolved (with two dissentients) that the Veterinary Committee, after conferring with the governing body of the Royal Veterinary College, be requested to make a special report to the Council, on the suggestion made by Mr. Jacob Wilson, that a portion of the grant of £200 be in future placed at the disposal of the Veterinary Committee, to obtain reports on special subjects of interest connected with veterinary science—the committee to report to the Council at their meeting in March.

Smithfield Club.—It appears from the annual report of the Club that its finances are in a flourishing state. The awards made this year in cups, medals, and money, exceed £2000, and the Club has cash in hand to the amount of £2692: besides £4384 invested in consols. Earl Powis succeeds the Duke of Marlborough as President, and the Marquis of Exeter is the President elect.

The number of persons paying for admission to the Agricultural Hall falls below that of 1868 by 1758, notwithstanding which the numbers passing the turnstiles is returned as 109,024, viz.:—on Monday 785; Tuesday 23,597; Wednesday 38,789; Thursday 31,879; and on Friday 13,974.—*Chamber of Agriculture.*

The East Cumberland Agricultural Society and the Foot and Mouth Disease.—It is announced that the East Cumberland Agricultural Society will abandon its Show of Christmas Stock in consequence of the great prevalence of the foot and mouth disease.

The holding of St. Faith's fair, Norwich, was abandoned from the same cause in 1845.

Alleged case of Foot and Mouth Disease in the Human Subject.—The *Scotchman* of November 6th says that this disease does attack human beings has been recently demonstrated in the neighbourhood of Forres, Morayshire,

where the malady has been prevalent for several months. The other week a woman who had been frequently in contact with cattle labouring under "murrain" at a farm near Forres, was for several days bad with some sort of disease about her mouth. On examination by the inspector and others the disease was pronounced to be "murrain."

[We give insertion to this report as we are anxious to note every supposed extension of the malady from cattle to the human subject. Few, if any, of these cases, however, have received confirmation from scientific investigators.]

Singular Transmission of a Cattle Disease.—The *Phare de la Loire* relates that a cattle dealer of Drain, Maine-et-Loire, perceived last week (about the middle of October,) that one of his finest oxen was affected with *anthrax* or carbuncle, and having consulted a veterinary practitioner, was by him recommended to destroy the animal. Being, however, reluctant to lose the value of the beast, he first slaughtered it, and then offered to give the skin to the sons of two butchers of Drain, named Renou and Marceau, as a recompense for their trouble of skinning it. The bargain was accepted, and at the same time he entered into an agreement with a butcher of Ancenia, and sold him, on cheap terms, the body of the animal, divided into eight pieces, the meat weighing about 750lb., averring that he had killed the ox because it was dying of a plethora of blood. These pieces were sent to Nantes and sold with a profit to a salter, who would naturally dispose of them in his turn. But the consequences to the young men who had taken off the hide were fatal, as both were a few days after seized with fever, accompanied with glandular enlargements under the armpits. One of them died on the Saturday following, and the other the next day, October 22nd.

Watering of Cattle in Railway Trucks.—A very praiseworthy and ingenious attempt to supply cattle with water during a railway journey has been made by Mr. W. H. Stone, M.P. for Portsmouth, which may be said to have been fairly successful in an experimental trial, at the Holloway Station, Great Northern Railway, on Wednesday, December 8th, at which we were present. Whether this plan is sufficiently simple, and the present fittings of a description to stand the rough work of cattle transit, we do not undertake to decide; but, at all events, the scheme worked better than might be expected on its first trial. An enclosed cistern or tank, capable of holding about forty gallons of water, is attached high up to the end of the truck; and underneath it, and

connected with it by a pipe furnished with a stop-cock, a second cistern of smaller size, having a ball-valve to regulate the supply of water when it is turned on is, fixed. Attached to the small cistern is another iron pipe having two branches, one of which is carried from end to end of the truck on either side underneath the projecting part of the floor, so as to be secure from injury, and not to interfere with the loading or unloading of the cattle. Each of the side pipes has five outlets connected with india-rubber tubes, which have at their other end a circular-shaped tin pan, about ten inches in diameter and three inches in depth. When not in use, the pans are hung on hooks screwed into the side of the truck at sufficient height to keep the tubes tolerably tight. To water the cattle, all that is required is to place the pans inside the truck on the floor, their size readily admitting of this being done by slipping them between the floor and the sides of the truck, and then to turn on the water from the upper cistern. As the cattle drink the water keeps rising in the pans, so that each animal can obtain a sufficient supply without any waste taking place. When all the animals have drunk, the flow of water is stopped by simply turning the stop-cock between the two cisterns, and the truck is at once ready to proceed on the journey.

Meat Preserving.—The *Toronto Globe* says that the meat preserving process, commonly known as the "Gamgee process," from which so much was at one time predicted, has not, on more extended trial, proved satisfactory, and is now practically considered a failure. We understand that nearly 100,000 dollars have been expended in experiments with this process. It was found that after a time, and on exposure to air, the flavour of the meat was changed, became sour and unpalatable, and its keeping quality was very seriously affected.

What Dutch Butter is made of.—Robert Brown, 19, labourer, was recently charged at the Thames Police court with being concerned, with three others not in custody, in breaking into the factory of John William Goodblood, and stealing sixty-four tons of suet, value £10. Four men were seen taking fat from the premises and putting it into a large truck. All the evidence against the prisoner was that he had been seen hanging about the factory for a week previously.

Mr. Paget asked what was meant by a Dutch butter factory? A witness replied that the butter was made in prosecutor's factory, in Glaucus-street, Bromley. Mr. Paget—Nonsense. That is quite absurd. Mr. Lewis, the solicitor,

produced some of the fat from the Dutch butter factory, and stated that it was sent to Holland to be mixed with Dutch butter, and re-exported to England. A Witness—The Dutch butter factory manufactures tons upon tons of the stuff. Mr. Charles Young—That is so; and it is sold in our shops as "real Dorset," and "real Cambridge," or "genuine dairy-fed butter." Mr. Paget—When we pay for butter we have common fat? Mr. Charles Young—Yes, sir. Mr. Paget said no doubt a serious robbery had been committed at the Dutch butter factory, but there was no evidence to justify him in remanding the prisoner for being concerned in it. If additional testimony could be obtained, the prisoner could be arrested again. At present he should discharge him.—*The Echo.*

Improvement in the Preparation of Carbonic Oxide.—In its most valuable and well-prepared summary of foreign chemical progress, the *Chemical News* gives the following abstract of a paper on this subject: When the gas just alluded to is evolved from a mixture of oxalic and sulphuric acids, as is well known, a mixture of carbonic acid and carbonic oxide gases is obtained. This mixture of gases the author causes to pass through a tube made red-hot in a suitable furnace and filled with charcoal previously well reburnt; and, after having washed the gas through a solution of potassa, and also lime-water, he thus obtains a bulk of the pure carbonic oxide gas three times larger than would be the case if the carbonic acid simultaneously formed were not decomposed by the red-hot charcoal, which must be free from yielding any carburetted hydrogen gases.—*Popular Science Review.*

Injection of Liquor Ammoniæ in Snake-bite.—Dr. Fayrer, of Calcutta, has made a very concise experiment to test the value of Dr. Halford's method of injecting Liq. Ammon. in cases of snake-bite. We ourselves some time ago expressed an *à priori* conviction that the remedy was as bad as the disease. Dr. Fayrer has lately (*Indian Medical Gazette*, July) described one of his experiments on a dog, and he thus sums up his observations:—The object of this experiment was to test the effect of the Liquor Ammoniæ injected into the venous circulation in an animal uninfluenced by the poison. It was used of the sp. gr. ·959 B. P., as directed by Professor Halford, and it was injected into the femoral vein in the manner suggested by him. The impression produced by this experiment was that the dog had a very narrow escape from death, and that the effects of the ammonia had nearly proved rapidly fatal.—*Ibid.*

THE VETERINARIAN, JANUARY 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

INOCULATION AS A PREVENTIVE OF CONTAGIOUS PLEURO-PNEUMONIA OF CATTLE.

Once more the question of the efficacy of pleuro-pneumonia inoculation is to be discussed, and experiments are to be tried, for the purpose of determining—not the possibility of communicating the affection by the introduction of the exudation from a diseased lung; but whether or not cattle which have been inoculated with it are thereby protected from an attack of the natural disease. All this sounds very well at first; but a little consideration will suffice to show that the proposed investigation is not quite such an affair of plain sailing as it seems.

Unfortunately, scientific men and also non-scientific men, or as the favourite term is practical men, are, in reference to this question, in a condition of hopeless antagonism, not of an active or unpleasant kind, but to the extent of having no ideas, modes of thought, or method of reasoning in common. It is of no consequence whatever which of the two shall carry out the inquiry, they are certain to be mutually unintelligible at the last.

With a very faint hope of averting some of the confusion which we foresee, we intend to state the present position of the argument as concisely as possible, dealing only with facts which have come under our own observation, and which bear with some degree of force upon the question which is again before the agricultural public.

To make the matter as clear as may be we shall place all speculative points first, and then leaving these proceed to the consideration of others which are capable of demonstration.

Speculation *the first* relates to the origin of the disease in this kingdom. Did it arise spontaneously, or was it introduced from the Continent in 1840? The answer to this question is based on a legend of the importation of

Dutch cattle into Cork by a certain consul for his own private use. As this event is said to have occurred less than thirty years ago, some one ought to remember the name of the consul, the number of the cows, and the fact of the disease first appearing among them, but none of these details have been satisfactorily made out. We have, however, no objection to admit the truth of the speculation without this evidence, as the admission does not in the least affect the present investigation.

The mode of propagation of the disease involves speculation number *two*,—Is it contagious? Is the virus contained in the breath or the excretions? Can the malady be artificially induced? All the evidence on these points is conflicting.

There is no doubt that the admission of a diseased animal into a cow-shed or field is followed in many instances by an extension of the malady to the sound animals; but then it has to be remembered that pleuro-pneumonia often occurs where no fresh stock has been introduced for many months, and also that the disease often ceases with the first or second case, even though no means are taken to arrest its spread. Further, the direct transference by inoculation of the fluid from a diseased lung does not cause pleuro-pneumonia or any disease like it; in fact beyond the production of local irritation it has no effect at all.

Many stock owners deny the contagiousness of the disease altogether, while others who have observed its course in localities where the circumstances are favorable to its progress, are equally positive in the opposite opinion. The balance of evidence is decidedly in favour of the contagion theory, and we therefore accept that view of the nature of the malady as the correct one.

Passing from the debatable points to facts which admit of only one interpretation, we have first to notice some of the peculiarities which are manifested during the progress of the disease.

Every one knows what is the rule that obtains in reference to contagious disease in general; an outbreak occurs, two or three animals are attacked, and day by day fresh cases are added, until the majority succumb, perhaps none

escape. No one who has carefully watched the course of pleuro-pneumonia of cattle, can assert that this account is explicitly true of it; on the contrary, it is impossible to predicate of an outbreak when the malady will cease, or how many victims it will seize, what time will elapse between the attacks, or after what period the remainder of the herd may be considered safe. Sometimes one animal after another is taken ill at an interval of a fortnight, and then several may be smitten almost on the same day. This kind of thing often goes on pretty regularly in some parts of the country, but in others, where the circumstances are totally different, the disease will assume a much more irregular character. Perhaps one animal is attacked and dies, and the disease is at an end; or in another instance, cases occur at various periods for a long time, and then disappear entirely. Change in the system of feeding and general management has, in our experience, been frequently followed by the sudden cessation of the disease after a considerable period of its continuance in a malignant form.

In the light of these facts, relating to the progress of the disease, we may proceed to consider some of those referring to the results of inoculation. That the introduction of a few drops of serum from the lungs of a diseased ox causes pleuro-pneumonia, or any disease bearing the slightest resemblance to it, no one believes or asserts. Therefore, whatever influence the operation may have cannot be due to the induction of the condition which usually attends inoculation with the matter of other contagious disease.

The local effects of swelling and suppuration may be produced over and over again in the same animal, and in this particular the introduction of the serous exudation differs entirely from inoculation with the matter of other contagious diseases.

Inoculated animals are in many instances subsequently attacked with pleuro-pneumonia. As a matter of fact cows have died of the disease after having lost their tails from the effects of the inoculation. This again is contrary to the experience of inoculation with the matter of other con-

tagious diseases. The only question which remains in reality is one of degree. Does inoculation confer any amount of protection, and, if so, to what extent?

Again, we appeal to facts within our own knowledge. Inoculated cattle, we repeat, have taken the disease naturally in many instances. A considerable number of inoculated animals resist the infection, so do a large percentage, in many cases, of animals which are not inoculated. In the same shed we have seen inoculated cows attacked while others left uninoculated have remained free of the disease.

After the performance of inoculation, pleuro-pneumonia sometimes ceases; so it does very often when the diet is altered or medical treatment is had recourse to, or disinfectants are employed.

Mr. Priestman has been very successful in arresting the course of the disease by the use of carbolic acid, and, we believe, prefers it to inoculation, which he at one time extensively practised. Under all the circumstances of the case, considering the very irregular course which the disease takes at different times, and in various places, what can be expected of a number of experiments undertaken by persons imperfectly acquainted with the subject, unaccustomed to the critical examination of evidence, and incapable of drawing correct conclusions from facts which they can only dimly observe? At best an addition to the mass of crude unsatisfactory evidence which already exists is alone to be expected.

We understand that it is proposed in Cheshire to inoculate certain animals on a farm and leave the rest; an experiment which has been performed repeatedly with results which have been adduced in proof of the total failure of the operation by its opponents and of its success by its advocates.

Again, it is contemplated, we believe, to *test* the matter in Norfolk by inoculating some thirty or more animals on a farm where two or three cattle have died of pleuro-pneumonia. The experiment, however, is to be made contingent upon the occurrence of another attack. To the pathologist there would be something infinitely amusing in these arrangements if there were not

something tragic in the idea of well-meaning people deliberately entangling themselves in confusion of the most hopeless character. Take the last suggested experiments as a type of the practical idea. The mere act of holding back until *another attack occurs*, faithfully expresses a conviction of the probability, or at least of the possibility of no more attacks in the herd, and yet, if one other animal be attacked and inoculation be then had recourse to, what is likely to happen? If none of the inoculated animals are attacked, what a testimony to the efficacy of inoculation! And yet in numerous instances the same result has followed the adoption of sanitary measures, the use of disinfectants, and it must also be confessed the "let-alone system."

In 1850 we were called upon to advise respecting the treatment of a number of cattle—Irish, Scotch, and Hereford—among which pleuro-pneumonia had made rather serious ravages; twenty-four animals having died out of 200. Various means of a sanitary character were employed, and judging from the result, they were completely successful, as no more cases occurred in the herd.

Recently an outbreak of pleuro-pneumonia occurred in a small herd of ten or twelve cattle; disinfection was resorted to, and the sick animals were removed from the apparently healthy. The disease, after attacking three animals, which died, ceased altogether, and has not since reappeared. These instances are only quoted in exemplification of the difficulty to which we have alluded, of distinguishing between *post hoc* and *propter hoc*; and it is to be feared that the difficulty will not be lessened by the prosecution of the inquiry according to the method which is being adopted If inoculation had been employed in the few instances referred to, and in numerous other cases which we can call to mind, a very strong argument would have been established in its favour; but while it is admitted that inoculated animals are at least sometimes attacked while others escape, and that the progress of the disease is arrested by other means, we cannot avoid the conclusion, that a repetition of former experiments is likely to lead to more contradictions.

If the farmers of England have made up their minds to

give inoculation for pleuro-pneumonia a fair trial, we venture to propose a few questions for their consideration.

What constitutes successful inoculation, and who is to be the judge? Upon this point much confusion appears to prevail; how much swelling of the tail is necessary? or must the caudal appendage be entirely sacrificed before security is gained?

If any protection be afforded by inoculation, how long is it likely to last? Are calves to be operated on, or not; or is it necessary to wait until they are a year old or more; if so, what is to save them from the disease meanwhile? If calves are to be inoculated, when is the operation to be repeated?

Points of this kind are of the first importance if the system is to be generally adopted in this country. We say if, because the antecedents are not quite so satisfactory as they might be; then if we take the Continental view of the subject, the prospect is not all sunshine. In Germany, Belgium, and Holland, the operation is extensively practised, and the faith in its efficacy is unbounded; but we have not yet heard that pleuro-pneumonia has been exterminated in any of those countries. Perhaps we may be more fortunate here; but it seems rather odd for us to get into a state of excitement in favour of a practice which originated, and is most supported in those parts of the world whence, as we persistently assert, animals are constantly sent to us infected with the disease, which, if the theooy of inoculation is worth anything, should have been long ago eradicated.

ORDER OF COUNCIL.

At the Council Chamber, Whitehall, the 16th Day of December, 1869, by the Lords of Her Majesty's Most Honorable Privy Council.

PRESENT:

LORD PRESIDENT.	MR. FORSTER.
LORD PRIVY SEAL.	

The Lords and others of Her Majesty's Most Honourable Privy Council, by virtue and in exercise of the powers in them vested under The Contagious Diseases (Animals) Act, 1869, and of every other power enabling them in this behalf, do order, and it is hereby ordered, as follows:—

1. This Order shall take effect from and immediately after the thirty-first day of December, one thousand eight hundred and sixty-nine.

2. This Order extends to Great Britain only.

3. In this Order words have the same meaning as in The Contagious Diseases (Animals) Act, 1869.

4. A Local Authority may, from time to time, with the view of preventing the spreading of foot-and-mouth disease, make regulations for applying to that disease all the provisions contained in The Contagious Diseases (Animals) Act, 1869, relating to pleuro-pneumonia, or such part or parts thereof as they may think fit: Provided nevertheless, that for the purposes of this Order, the rules for foot-and-mouth disease contained in the Schedule to this Order, shall be in substitution of the pleuro-pneumonia rules contained in the Seventh Schedule to The Contagious Diseases (Animals) Act, 1869, and a Local Authority may, from time to time, apply the whole of such rules, or any part or parts of such rules as they may think fit, for the purpose aforesaid: and, provided further, that such Local Authority may, from time to time, revoke or alter any such regulations, and that for the purposes of this Order, section fifty-five of the said Act shall be read and have effect as if the word "ten" were inserted in place of the word "thirty."

5. The forms given in the Eighth Schedule to The Contagious Diseases (Animals) Act, 1869, with such variations as circumstances require, may be used by an Inspector for the purposes of this Order.

6. Nothing in this Order shall affect the operation of the provisions contained in Article 21 of The Metropolitan Contagious Diseases (Animals) Order of August, 1869, relating to foot-and-mouth disease.

SCHEDULE.

Rules for Foot-and-Mouth Disease.

1. These rules are to have effect with respect to any field, stable, cow-shed, or other premises infected by foot-and-mouth disease.

2. Animals affected with foot-and-mouth disease, or herded with animals so affected, are not to be moved from such field, stable, cow-shed or other premises, or from any land or building contiguous thereto in the same occupation, except either for immediate slaughter, according to regulations to be from time to time made by the Local Authority for insuring such slaughter, or if not for immediate slaughter, under a licence signed by an officer of the Local Authority appointed to issue licences in that behalf.

3. Sheds and places used by animals affected with foot-and-mouth disease are forthwith, after being so used, to be cleansed and disinfected to the satisfaction of the Local Authority.

(Signed) ARTHUR HELPS.

Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Horses and Stables; by Colonel F. FitzWygram, 15 the King's Hussars. London: Longmans, Green, Reader and Dyer.

The author of 'Horses and Stables' has contrived in the space of six hundred pages of octavo to say something upon everything relating to the construction and regulation of stables, and the anatomy, diseases of horses.

In view of the multiplicity of subjects it is hardly necessary to state that no one of them is treated exhaustively, at the same time the information which is given is conveyed in very precise terms, and is of a kind to be generally intelligible to readers who are not learned in scientific lore.

Many horse keepers would like to know something more than they do respecting the proper methods of managing their animals, but are deterred from seeking knowledge by the fear of exhibiting ignorance; to all such 'Horses and Stables' will be a boon.

Some of the subjects touched upon, for example, contagion and infection, inflammation, fever, and the minute structure of certain organs and tissues, are not of a kind to be disposed of so lightly, with benefit to the reader; but on all matters of a practical nature the writer is clear and instructive.

The chapter on conformation, with the diagrams of good and bad points, will be particularly interesting and useful to the tyro.

Descriptive Anatomy of the Horse and Domestic Animals. Compiled chiefly from the Manuscripts of Thomas Strangeways, LL.D., M.R.C.V.S., and the late Professor Goodsir, F.R.S.S., Lond. and Edin. By J. Wilson Johnston, M.D., F.R.S.E., and T. J. Call, L.R.C.P.E. Edinburgh: Maclachlan and Stewart. London: Simpkin, Marshall and Co.

Anatomy is only to be learned by diligent dissection, and the best book that ever was, or ever will be written on the subject can do no more than guide the student in his researches. Plain descriptions of the general characters of organs and

structure, accompanied by illustrations of parts which are not easily identified from mere verbal description, are of great assistance to the dissector, and these are abundantly furnished in the volume before us, which has been compiled by friends of the late Professor Strangeways, with the laudable object of adding a worthy contribution to the literature of our profession, facilitating the education of the student, and adding to the resources of the family of the late lamented Professor of Anatomy in the Edinburgh Veterinary College.

The work is not free from errors, most of which may, perhaps, be traced to inadvertence on the part of the editors. The plates of the dentition of the ox and sheep are palpably incorrect, and do not accord with the letterpress description; and in the appendix we are told that the incisors of the ox and sheep are developed in the upper jaw only. These, and similar instances of *lapsus calami*, may be corrected in a second edition, which we hope will soon be required.

Extracts from British and Foreign Journals.

PROPOSED AMALGAMATION OF THE MEDICAL SOCIETIES.

A SECOND meeting of the General Committee of Delegates of the different Medical Societies which have accepted the resolutions of the Royal Medical and Chirurgical Society, as a basis for the discussion of the suggested amalgamation, met in Berners Street on the evening of the 13th ult. Dr. Greenhow submitted to the committee, in accordance with a request made at the previous meeting, a statement of the probable financial condition and strength of the proposed amalgamated society, based upon the balance-sheet and returns of subscribing members of the societies which have entertained the scheme. The statement, we understand, was singularly able and lucid, and it is to be regretted, in the interests of the proposed amalgamation, that the committee did not determine to print it. The facts presented could not but have a wider interest than that of the occasion which called them forth; and the deliberations of the Committee would have been none the less wise, to say the least, if they were assisted by the criticism of the outer professional world, and particularly of the members of the societies immediately interested, on the important question of finance.

Dr. Greenhow's statement tended, it would appear, to the

seemingly anomalous conclusion that the amalgamation would not economise the expenses of working the different sections of the amalgamated Society if the existing rate of expenditure for the publication of transactions was to be continued. Indeed, upon this the probable income, he concluded, would not meet the expenses of the amalgamated Society. This result was obtained by excluding all doubtful sources of income, and possibilities of an increased number of members; and by assuming that the subscription to each section would be a guinea, without entrance-fee. The important question of the maintenance of the library was left out of the calculation. A special, but optional, subscription of two guineas for the library would be called for, so far as at present can be seen, to keep it in its integrity, and maintain a proper rate of increase.

The immediate cause of Dr. Greenhow's statement had been the requirement of the Pathological Society that the accustomed expenditure of the society for the transactions should be provided for. Assuming that the number of members of the different sections would not diminish after amalgamation of the societies, Dr. Greenhow expressed the opinion that three-fourths of each section's special income would meet the difficulty raised by the Pathological Society, and he made a motion for the alteration of Resolution XXI for the suggested scheme to that effect. The motion was withdrawn for the time being, as the delegates of the Pathological Society accepted the conclusion of Dr. Greenhow provisionally; and the committee then proceeded to consider the resolutions adopted by the Medico-Chirurgical Society *seriatim*.

The first resolution, reciting the advisability of amalgamation, was passed over, as having been determined by the different societies sending delegates in the affirmative. On the second resolution—the designation and classification of the different sections—Dr. Tyler Smith, supported by Dr. Barnes and Dr. Graily Hewitt, took exception to the junction of medicine and surgery in one section. The objection was one of pocket rather than principle. It ran to the effect that an injustice would be done to obstetrics if the two subjects of medicine and surgery were to be combined into one section, with a guinea subscription, while obstetrics with its one subject was also to have a subscription of one guinea. Either obstetrics was made too dear, or medicine and surgery too cheap. A motion to the effect that medicine and surgery should be separated into different sections was, however, negatived unanimously, the delegates for obstetric

medicine not voting. It seemed to be held by the other delegates (as we understand what transpired) that the previous decision of the Medico-Chirurgical Society was almost binding upon this question; at least, that the question practically related to an existing society of medicine and surgery, the interests of whose members, within certain limits, had to be considered: the question was not one of pure principle. The proposition of the obstetrical delegates (on the assumption that a guinea was to be the minimum subscription), if accepted, would have done injustice to the fellows of the Medico-Chirurgical Society, and would have brought about no benefit for the members of the Obstetrical Society. A counter proposition that obstetrics should be joined to the section of medicine and surgery was also negatived. With the exception of the section on anatomy and physiology, which was unanimously condemned, the different sections were adopted as proposed in the resolutions.

The meeting then adjourned. At the next meeting of the committee the question of finance will be entered upon formally, and the practicability of amalgamation probably be determined.—*Lancet.*

PROTOXIDE OF NITROGEN AS AN ANÆSTHETIC.

M. Jeannel, the distinguished Professor of Pharmacy and Materia Medica of Bordeaux, has just brought forward a valuable memoir on the subject of protoxide of nitrogen. We extract from this work those of the author's conclusions which more particularly relate to the anæsthetic properties of the gas:—

1. The purified gas, such as is employed at present, does not produce those exhilarating effects which have been described by authors of the commencement of the century.

2. Anæsthesia produced by protoxide of nitrogen is not so complete as that brought on by chloroform; but it differs essentially therefrom by the rapidity of invasion, the absence of excitement at the outset, and the facility with which one returns to the normal condition. It produces also a more decided kind of asphyxia.

3. It is of convenient application to operations of a short duration; and it is probable that the agent may be applied to the more important surgical operations, by preserving a suitable interval between the inhalations.

4. We are justified in saying that protoxide of nitrogen exposes less than chloroform to a fatal accident, but it

certainly does exert such an action; it therefore should be exclusively kept in reserve for operations where peril is increased by pain. The use of the gas should be practised with all suitable guarantee and scientific precaution.

5. Protoxide of nitrogen is of less convenient employment than the fluid anæsthetics, on account of the apparatus which it necessitates.—*Lancet.*

OBSERVATIONS ON THE PREVAILING DISEASE OF CATTLE, KNOWN AS ECZEMA EPIZOOTICA, EPIZOOTIC APHTHA, VESICULAR DISEASE, DISTEMPER, MURRAIN, OR FOOT AND MOUTH COMPLAINT.

By Professor Brown, Inspector in the Veterinary Department of the Privy Council, and Veterinary Inspector to the Bath and West of England Society and Southern Counties Association.

Mouth and foot disease is not new to stock-owners of this country. For many years it has had a constant existence in the kingdom, prevailing sometimes to an extent sufficient to excite apprehension and occasion serious loss, and at other times attacking few animals and causing but little inconvenience. Among the memorable periods the present year will take an unhappily prominent place; and if the malady continue to advance with the rapidity which has distinguished its recent progress, the year 1869 will stand almost unprecedented in this respect. Notwithstanding our long acquaintance with the affection, its true nature is not generally understood; and its treatment has been mainly confided to the empiric, hence there has been but little advance made in the improvement of the means used to combat the disease, and not a few of the specifics which have been handed down to the present generation are more destructive in their effects than the affection which they are meant to cure. Empiricism is more favorably situated in regard to this than to any other infectious malady to which animals are liable; if its nostrums do not absolutely kill, they are quite certain to obtain the credit of having cured, the patient. The disease left without interference seldom destroys life, and therefore every system of treatment which is not positively pernicious may claim a large percentage of recoveries in proof of its efficacy.

Much if not all of the confusion which prevails repecting the nature of the disease and the proper method of treatment is due to the fact that the agriculturists have not hitherto seen the necessity for an exhaustive inquiry in reference to

the causes which influence its propagation, and have placed too much reliance upon the asserted infallibility of various specifics recommended to their notice by ignorant persons; but dearly-purchased experience during the existence of cattle-plague has not been without fruit. A few years ago a measure which proposed to restrict the movement of animals affected with mouth and foot disease and other contagious affections was almost, without exception, opposed by owners of stock; but so far has the agricultural public advanced in its estimation of sanitary legislation, that a much more severe measure has just received the royal sanction, not only with the concurrence of the farmers of this country, but absolutely in compliance with their demand.

It is hopeful to perceive among breeders a growing recognition of the importance of dealing promptly with contagious and infectious diseases of animals, upon the principle that the destruction which such affections cause is the loss of so much bone and muscle to the nation. In spite of all that has been said and probably yet will be said respecting the duty of the physician in the presence of pain and disease, the fact still remains that the time spent in the attempt to cure preventible maladies is wasted; and when from the nature of of the disease it must inevitably happen that every cure effected involves the sacrifice of many healthy animals which are within the sphere of contagion, the proceeding is something worse than waste of time—it amounts to reckless and prodigal waste of animal life.

Fatal results do not usually follow the attack of the epizootic which is now under consideration; it is, therefore, possible to discuss deliberately the means of cure as well as those of prevention, and it is not improbable that an investigation into the circumstances under which the disease first appeared in this country, its subsequent irregular progress, with an account of the observations which have been made in reference to its nature, causes, symptoms, results, treatment, and prevention, may lead to a more rational comprehension of these points than at present appears to prevail.

Introduction of Mouth and Foot Disease into England, and its progress to the present time.

Like some other and more fatal diseases of animals, eczema appears to have prevailed extensively on the Continent before it reached this country. Nothing was known of the malady in England before the end of the summer of 1839; but an epizootic, which was probably a virulent form of mouth and foot disease, is alluded to by Mills as having made great

havoc in Italy and Germany in 1711. "The affection," he writes, "came originally from Hungary by means of bullocks brought from that country (to Germany); for there appeared nothing in the constitution of the air, nor in the food, that could give rise to it; nor did it affect cattle which had no communication with those that came from Hungary. The infection seemed to be communicated by their saliva dropped in the grass, so that the sound cattle which afterwards fed on the same pasture contracted the disorder with which the others were infected. The disease was attended with a burning heat, a total loss of appetite, a difficulty of breathing; in some bullocks the tongue was inflamed and covered with many red blisters."

In several particulars—the communication of infection by the agency of the saliva and the blisters on the tongue especially—the description of the epizootic corresponds to the symptoms of the mouth and foot disease; but the other and more severe lesions to which he refers, and the great mortality, are not ordinary characteristics of that disease.

In 1834 the malady appeared in Hungary and Lower Austria, and spread to Bohemia, Saxony, aud Prussia; taking a north-easterly direction, it entered Germany, and thence advanced to Holland and France, reaching England in August, 1839.

Through what channel it was conveyed to our shores has never been satisfactorily ascertained. No doubt exists as to the fact of the disease being at that time in Holland; but no foreign cattle were permitted to land in this country until after June, 1842. If, therefore, the assumption of its having been introduced from the Continent be admitted, it must be further assumed that the communication of infection was by indirect means. It sometimes happened that cattle which had been shipped for the use of passengers or crew on a voyage were disembarked in this country, and it is possible that the disease might have been thus conveyed to English stock; but there is no reliable evidence to justify this conclusion. One fact only in reference to its origin is incontestable, viz. the prior existence of the malady on the Continent; but whether it was brought by individuals or substances which had been in contact with infected foreign animals, or by the accidental landing of a cow from a vessel which had recently left a port near to which the disease was raging; or travelled westward to our land, in obedience to that unknown law which regulates the course of many epidemic and epizootic diseases, cannot be determined; and a

critical investigation of this part of the subject is not likely to repay the inquirer.

Since the disease appeared in England it has never been entirely eradicated, although its progress has not been uniformly rapid; some years have been rendered remarkable by its extensive spread, and others by its assumption of a character of unusual virulence; many districts have remained free for years, and in other parts of the country it has not been absent for many consecutive months. As would be expected, breeding districts have been usually exempt, and the principal force of the disease has always been expended upon places which are on the great lines of cattle traffic.

The first report of the existence of mouth and foot disease in England came from Norfolk, near the town of Loddon, and some Devon cattle at Langley Grange were the first to suffer; the remaining cattle on the farm were subsequently attacked; the disease rapidly extended to London, and in September, 1839, it was conveyed to Laleham, near Twickenham, by a calf which was bought in Smithfield Market.

During the autumn of 1839 the malady continued its course, and in the beginning of 1840 the Royal Agricultural Society of England took action for the purpose of obtaining information respecting the disease, and also of advising respecting its treatment. The Veterinary Committee of that day, in concert with the late Professor Sewell, drew up and forwarded to each member a circular, dated April 8th, 1840, giving a short account of the symptoms by which the disease might be recognised, and offering some suggestions for its treatment.

That the disease referred to in the circular was in all essential particulars the one which we have now to deal with, will be evident from the following description :—"The attack does not always commence in the same form, but ultimately terminates in a disease of the same type and character; in some animals it commences in the feet, between the claws, and in others it appears to have begun in the mouth; in others a stiffness in the legs of the animals is first perceived, as if treading upon thorns and briars; then follows a discharge of saliva from the mouth, and a champing of the lips, accompanied with blisters on the tongue, palate, and lips; the blisters peel off, loss of appetite and general debility ensue."

Treatment recommended by Professor Sewell included attention to the animal's comfort, laxative medicines, followed by tonics, astringent lotion for the mouth, and to the diseased feet poultices, and afterwards styptic solutions.

This circular was followed by another, dated February 3rd,

1841, requiring information respecting the extension of the disease, and the various conditions under which it appeared; the result of the inquiry was published in the Society's Journal for 1841. During the progress of the disease it was observed that animals of various kinds which were exposed to the infection suffered from its effects; not only cattle, but also sheep and pigs were attacked, and in many instances poultry did not escape. Sheep were most severely attacked in the feet; and loss of the horny covering of one or more of the digits was not an uncommon occurrence; after a market at Smithfield it was frequently necessary to sweep away the hoof which had sloughed off the feet of diseased sheep especially, but also occasionally of pigs and oxen while they were exposed for sale.

The admission of foreign stock in 1842 was not attended with an increase in the number of attacks; indeed it is fair to conclude that the malady declined from this time to 1845, when it again became prevalent.

In Norfolk, where the infection first broke out among cattle, in 1839, it appears to have spread very rapidly in 1845; and in consequence of its existence St. Faith Fair was prohibited. Gradually, as in the first outbreak, the disease declined, notwithstanding that in March, 1846, the duty on foreign stock was removed, and a great increase in the number of imported animals was the immediate result. No accession of the mouth and foot complaint occurred until 1852, when it raged in various parts of the United Kingdom, appearing in isolated situations in a quite unaccountable manner. In two remarkable instances it was detected among cattle which had not been removed from the premises, in one case for several years, and in the other for many months. On one farm it attacked simultaneously ten cows, which had been for a long time kept quite remote from the other stock; and on another farm nine miles distant, it appeared among some yearlings which were in the straw-yard, where they had been for some time. In neither case did the malady extend to other stock on the farm, owing probably to the strict isolation of the diseased animals; nor at the time of the outbreak was the disease known to be prevalent in the immediate neighbourhood of either homestead.

Mouth and foot disease prevailed in a very severe form in the year 1861, and continued for some time; in 1862 it was detected among cattle at the show of the Royal Agricultural Society at Battersea Park, a Bretonne bull being the first animal attacked. The affection spread very quickly, and the subsequent removal of animals from the show-yard to all

parts of England contributed to the extension of the infection, and many valuable animals were afterwards destroyed in consequence of the effects of the disease.

About this time mouth and foot complaint assumed a very malignant form among cattle and sheep at Harrow, and from the circumstances under which it occurred there is reason to believe that the severity of the disease was due to the use on the land of water, which was contaminated with the excreta of infected animals. Owing to the tenacious character of the soil, the solid matter was retained on the surface, and all the cattle and sheep which were pastured on the ground became affected with mouth and foot disease, associated with fever of a low character, which occasioned great debility, and continued for a long period.

In 1863 the affection appeared among the cattle at the Smithfield show; but from this time it gradually declined until 1865, when it recurred in a very severe form immediately upon the outbreak of cattle plague, not unfrequently attacking the animals which were at the time suffering from that disease. Many of the cases of eczema which were examined in the autumn of 1865 presented remarkable lesions of the mouth, the abrasions of the membrane of the palate and cheeks being as extensive as they were in severe cases of plague. A reference to the evidence which was given before the Royal Commission on October 10th, 1865, will show that this resemblance in the state of the mouth in the two diseases attracted my attention at the time.

No importance was attached to the prevalence of mouth and foot disease at this period, while the cattle plague was destroying the stock of the country; and the fact of the disease assuming a virulent form, and simulating in some of its symptoms the more fatal malady, so far from leading to its immediate recognition, tended to render exact discrimination more difficult, and even impossible, on occasions when neither hesitation nor delay was allowable.

Hundreds of cattle affected with this malady were seen in the beginning of 1866, but when the restrictions upon cattle traffic were carried into effect with an increasing degree of stringency, as the cattle plague made incursions to new districts, mouth and foot disease and pleuro-pneumonia declined; and when the imminence of the danger led to the almost total stoppage of fairs and markets, and the movement of cattle all over the country, these diseases almost ceased to exist, or at least assumed proportions which prevented them from being specially observed.

(*To be continued.*)

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

Giornale di Medicina Veterinaria di Torino.

LACERATION OF THE ILIO-ROTULIAN MUSCLE.

By R. Bassy.

A MARE suddenly fell lame while drawing a carriage; it was with great difficulty she reached the stable, a distance of two kilometers. There was tremor, and the animal could hardly put the left foot to the ground; the fetlock was projecting forward; there was a depression above the stifle, and great pain was evinced on pressure of the parts.

The diagnosis was rupture of the ilio-rotulian muscle. Cold lotions were ordered to the parts, with rest; and a few doses of opium were administered to allay the irritation. At the end of the third day the opium was omitted, but the cold applications, with the addition of narcotic embrocations, were continued.

Fifteen days having elapsed without any improvement, frictions were made with blister ointment, in order to mitigate the local pain, which was still very intense. This had the desired effect; the patient began to move the affected leg with ease; but on being led out of the stable she slipped, and the lameness returned with the same intensity as before. No doubt but the laceration had reoccurred, having only imperfectly repaired. The mare was now left to herself in a loose box, without any further treatment, and two months after she was able to work at a walking pace, at which she was kept for a month; after that she went to her regular quick work.

In the month of October last the author was requested to attend a case of supposed colic. He found the patient down on the left side; the pulse was increased, partial tremors existed; the skin was hot, and slightly covered with sweat. Some moaning was audible from time to time. Had made a short journey in a carriage at the side of another horse. When the animal got up it was found that she was lame in the off hind leg. There was the same depression above the stifle as in the previous case, the symptoms being in every respect the same. There remained no doubt that it was a case of laceration of the ilio-rotulian muscle. The same treatment,

i. e. revulsives, rest, &c., were adopted. Twenty days afterwards the cure was complete, and the animal was put to slow work. The author not having had an opportunity of examining *post-mortem* a case of rupture of the ilio-rotulian (rectus muscle), to make quite sure that he had not made a mistake in the diagnosis, the more so as Professor Delwart, in a memoir on the laceration of the muscle in question, considers that the prognosis is always unfavorable, decided on removing all doubts by making a section of the muscle; this operation he performed on a mule. By means of a long straight bistoury he made a subcutaneous division of the ilio-rotulian muscle, when suddenly all the phenomena above described were produced, though with less intensity, leaving no doubt of the correctness of the diagnosis of the above cases.

MICROSCOPIC INSPECTION OF MEAT IN PRUSSIA IN 1867.

From the reports of the district government-veterinary surgeons, collected by Professor Müller, of the veterinary school of Berlin, it appears that from the 1st of April, 1867, to the 1st of April, 1868, cases of trichinosis had been common, not only in certain new districts, but also in those in which it had formerly prevailed, as, for instance, in that of Stettin, &c. The frequent appearance of trichinæ in the Duchy of Brunswick and in the Government of Meigelburg, shows that the inspection is of great importance, and that in many cases it has prevented the malady caused by the parasites extending to the human subject. In the Government district of Gumbinnen seven pigs were found infected with trichinæ, and though part of one, killed by a butcher in Tilsit, had been disposed of, no cases occurred in the human subject. However, one pig, fattened by a restorator of Gumbinnen, killed in January, 1868, was the cause of a great number of cases in persons who had eaten of the flesh; but as all of them recovered, the restorator was only fined in the mitigated penalty of five dollars. The pigstye in the latter case was only separated by a wall from another sty, in which two pigs had been more than a twelvemonth before affected with trichinæ; it was, therefore, supposed that the parasites had been carried by a number of rats which infested the stye. The infection of eight persons was consequent on the eating of raw meat in the making of sausages, or eating of them without being sufficiently cooked. The remainder of the sausages and the meat contained a great number of trichinæ enclosed in their capsules.

In the winter a case occurred in the district of Pillkallen, in a pig which had been during the summer in the meadows, and afterwards fattened on peas and the refuse of the kitchen; but the sty was infested with rats. Werner, government veterinary surgeon in Stallupönen, examined microscopically, in the same year, the flesh of eighty-five pigs and twenty-four horses. In two pigs, one of which had diseased lungs, he discovered trichinæ. Comparatively few trichinæ were found, and these principally in the diaphragm, which contained besides, a great number of psorospores (Rainey's corpuscles). These corpuscles have been found in vast quantities in pigs submitted to inspection. Werner has remarked that in young pigs they are thinner and longer in the body, and more transparent than in old animals. In the government of Dantzic some people were attacked with trichinosis from eating raw ham from a trichinous pig, but they all recovered. In the government of Potsdam two pigs were found affected with trichinæ, also two in the government of Frankfort. In the government of Stettin the malady seems to have been stationary this year, the same as in the preceding; trichinæ were found in five pigs slaughtered. In these cases their existence could not be attributed to rats, as none were found in the rats which were caught for the purpose of examination. Some twenty years ago, in the same district, after the pig-killing season, more than twenty persons became ill with symptoms which are at the present time considered to be those of trichinosis, but which, at that time, were thought to be those of rheumatism and treated accordingly. They all recovered. Some of these persons are still alive; one woman in particular, who was ill at the time more than three months. In the district of Pyritz twelve pigs were killed on a farm, eleven of which were infected with trichinæ. In an old pig, which had been bought of a dealer, a great number were found. This pig had not, while fattening, shown any symptoms of illness, but, according to the information of the attendant, had eaten some of the rats, which were in great numbers in the sty. The meat of the pig in question was roasted for the sake of the fat, and the rest condemned; but one of the workmen secretly appropriated some of it, and, having well cooked it, had eaten it without any bad effect.

The district of Magdeburgh had been again distinguished by the frequent appearance of trichinæ amongst the pigs.

In the district of Aschersleben, cases of trichinosis appeared among the inhabitants from eating pork, either raw or badly cooked. In the town of that name more than thirty persons

were affected, who, however, all recovered. On premises where, in January, 1867, five pigs were killed, two were found affected with trichinæ, and on inspection, 12th of December in the same year, the parasites were also found in two pigs, while in two others, killed at the same time, none existed. In six killed on the 13th of January, 1868, three were affected, while, on the other hand, five killed on the 17th of February were free from trichinæ. The rats, which as usual infested the sty, were examined, and found to be infected with trichinæ; in consequence the styes, as in the other cases, were thoroughly repaired and rendered safe by destroying the rats.

Heinrich, government-veterinary surgeon, shows that the district from Magdeburgh to Brunswick, and from the town of Stendal to Halle, is the principal seat of trichinæ; at the same time it is a district in which microscopic inspection of butcher's meat is enforced. Inspection, however, is still more strictly carried out in the duchy of Brunswick, where it is enforced on the spot the pigs are slaughtered. Butchers and owners are liable to a fine of five to ten dollars if timely notice is not given to the inspector, and the latter to a fine of twenty-five dollars for any neglect on his part in carrying out the inspection in accordance with his instructions.

From a report of an insurance company against losses from trichinæ twenty-one cases have been ascertained in thirteen different localities, and nineteen are reported by another insurance company, for the same purpose, in the duchy of Brunswick.

In the province of Westphalia, district Dortmund, in the town of that name, trichinæ were discovered in a pig, and five persons who had eaten of the pork were affected with them, but all recovered. In the district of Meschede three maid-servants were affected with trichinosis, after having eaten infected pork.

As in former years, trichinæ have been more frequently found in the government districts of Gumbinnen, Stettin, New Pommerania, and in the province of Saxony; but, on the contrary, in the government district of Stralsund, Breslau, and Liegnitz, where in former years cases were not rare, none have been found in the last year.—*Magazin für die gezammte Thierhielkunde, &c.*

[This report, though much abbreviated, shows that trichinæ might be easily imported into this country, either by live pigs or Westphalian hams, of which large quantities are consumed; it also points to the importance of the use of the microscope for the discovery of these dangerous parasites.—*Translator.*]

WEST OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

An influential gathering of members of this Association took place at Amery's Hotel, Bath, on Wednesday, the 8th December, under the presidency of T. D. Broad, Esq., of Bath. There was a larger number present than on any previous occasion; the company including Messrs. Thomas Greaves, Manchester, President of the Royal College of Veterinary Surgeons; W. Raddall, and C. Parsons, Launceston; J. M. Broad, Bristol; Vincent, Swindon; Dring, Bath; James, Corsham; James, Thornbury; Barker and Handy, Chipping-Sodbury; Thomas, Plymouth; Stock, Sherborne; J. Goodwin, Secretary Bath and West of England Society; Dobson, Bristol General Hospital; Lawrence, Stapleton, and J. A. Collins, of Exeter, Honorary Secretary.

The Secretary having read the minutes of the previous meeting, and Messrs. Stock, Sherborne, and Barker, Chipping-Sodbury, having been elected members of the Association,

The *President* read the following paper on "The Pathology and Treatment of Navicular Disease."

These associations tend greatly to raise the status of the profession, by promoting unanimity and inducing members to study the science and literature of the profession, which is much needed, it being too commonly the case that when one diploma is obtained scientific study is immediately abandoned; and in too many cases not even the *Veterinarian* is seen. In March last I was at two towns in the West, and took occasion to ask the veterinarian surgeons if they subscribed to the *Veterinarian*. The answer in each case was, "No! Had there been anything good in it lately?" If members will so neglect their duty need we be surprised at the want of confidence so often shown by their employers?

What would be thought of a member in the medical profession who did not keep himself posted up by reading its weekly journals and other medical and scientific works which are from time to time being published?

Every member who obtains a diploma, enabling him to legally practice a certain calling, and endowing with a public status is, in my opinion, bound, if not by inclination at least morally, to advance that profession by every means at his disposal. Without an acknowledgment of this responsibility, and without an effort to meet it, progress is impossible, and the veterinary science of fifty years hence will be no better than that of to-day.

We want more such men as Mr. Fleming in the profession, who, I believe, is doing more for its advancement than any other private member. The work of his before you, "Horseshoes and Horseshoeing," is a most valuable contribution to veterinary literature,

and must have entailed on its author an immense amount of labour and expense; in return for which I hope that every member of the profession will take a copy, to encourage him to go on with the other works he is compiling.

It must have been a great satisfaction to Mr. Fleming to see the *Times*, November 18, in its review on his work on 'Shoeing;' and Fitzwygram on 'Horses and Stables,' acknowledges that there is such a thing as veterinary science, and that veterinary surgeons can, and may venture to assume a position in the literary world.

On taking a retrospective view of the profession, I find that we are marching onwards, but slowly; and it will continue so, until more members are induced to take a greater interest in its advancement.

As our Secretary could not prevail on any other member to read a paper, I was induced to promise one on the Pathology and Treatment of Navicular Disease, it being a disease more frequently brought under the notice of town practitioners than all other lamenesses put together, and I am not acquainted with any work in which the pathology is correctly and definitely given. I therefore purpose to fill up the hiatus, and place before you between two and three hundred wet and dry morbid specimens, the whole of which have been dissected by myself or under my own superintendence, and the history of a great many of them I know well. By making sections of the navicular bones, the disease is shown both in the wet and dry specimens more clearly, and will prove to you the correctness of the theory I am about to advance; for without a correct pathology, practice must ever be uncertain and unscientific.

This disease was supposed to be first described by Mr. Turner in 1816.

Osmer[1] distinctly mentions it:—"I have seen many instances of sudden lameness brought on horses in hunting and in racing by a false step, which have continued lame their whole lifetime; and upon examination, I have found the ligaments of the nut-bone (os naviculare) rendered useless for want of timely assistance and knowledge of the cause; from hence the cartilages of the same have been sometimes ossified, and the bones of the foot have been sometimes wasted and sometimes enlarged, it being no uncommon thing to meet a horse whose feet are not fellows, the natural form of the injured foot being generally altered hereby; and nothing can contribute more to such an accident than the unequal pressure of the foot in our modern concave shoe."

Elsewhere he speaks of the erosion of the cartilage of the navicular bone, and the symptoms indicative of this foot disease; and long before this period, contracted hoofs, arising from undue paring by the maréchal, and lameness resulting therefrom, were, as we have seen, often mentioned. But the unknown author of the "Grand Maréchal, Expert et Francais," published at Toulouse in 1701, not only gives us this information, but actually describes the neurotomy operation for the relief of this lameness, the discovery of

[1] Fleming on 'Shoeing.'

which in 1816, by Professor Sewell, has almost immortalised his name.

Mr. Turner's theory was that the disease commenced in the synovial membrane, and extended to the cartilage of the navicular bone and tendons.

The late Professor Dick taught that the disease was the result of sprain of the tendon passing over the navicular bone, and that the fibres became lacerated and attenuated from friction over the roughened surface of the bone.[1]

These views have been generally received by the profession as correct, but I shall be able to prove to you that they are totally erroneous. I will not occupy your time by relating a lot of symptoms which only indicate the disease in its advanced stages, but simply state that there are two symptoms which ought at all times to excite suspicion, whether lameness exist or not; that is an upright pastern, either natural or the result of relaxation of the flexor tendon consequent upon work; also pointing of the toe, although I have known horses point for years without becoming lame, and I have known other horses with confirmed navicular disease which never pointed. Contraction used to be considered the great cause, but it is now known to be only an effect of the foot not receiving its natural pressure from the ground. Feet may be naturally oblong yet healthy; or they may undergo a considerable change in shape, from the bad shoeing and stable management, without producing lameness. In fact there are numbers of horses with contracted feet which are perfectly sound. Such feet are, nevertheless, more predisposed to take on diseases when subject to the exciting causes, than more perfectly shaped ones; flat weak feet are also more liable to become affected with this disease as well as with laminitis; it is, however, to be found in all kinds of feet. Horses with high action are also more liable from the greater amount of concussion produced. The temperature of the foot, as a rule, is increased after exertion in this disease; but after standing in the stable a short time it often becomes abnormally cold.

No other part of a veterinary surgeon's practice is tested so much as the opinions given in reference to lameness; consequently it behoves him to avail himself of all the knowledge possible, to enable him to give correct opinions. In examining saddle horses as to soundness, I make a rule of riding them, which often enables me to detect faulty action, the result of navicular disease, when I have not been able to satisfy myself that it existed from merely seeing the horse trotted.

When that system is not adopted, unsound horses are occasionally passed as sound; and I make this statement without fear of its being disproved.

The disease generally commences in one foot, and if not soon relieved, the other foot is very liable to become affected. There are predisposing causes, the greatest being hereditary (*i. e.*, tendency to a low form of inflammation in a particular tissue); inaction

[1] See 'Veterinary Papers of Professor Dick,' lately published.

from being kept too long in a stall or small place,—the feet undergo changes, all the tissues become altered in character for want of exercise, the circulation is impeded, congestion takes place, and an altered character of the horny secretions resulting, the hoof loses its normal elasticity, and when brought into action, does not yield so readily to pressure; consequently, the navicular bone is more likely to be affected by concussion and compression. In all cases where one foot is smaller than the other, it must be looked upon with suspicion, even if no lameness is apparent. There are no positive demonstrable signs of the early stages of navicular disease. In the absence of all appearance of disease in any other part of the foot, or leg, the experienced practitioner is soon able to state that it is a case of navicular disease; if it has existed long, there will be generally (not invariably) alteration of structure of the inner quarter or heel of the wall. Feet which are small at the top, and spread out wide at the bottom, commonly called bell-shaped, are very much predisposed to disease.

Causes.—Hereditary predisposition, bad shoeing, the feet being cut and reduced too much, the shoes made either thick at the heels, or with caulkings, standing in a stall too long without work or exercise. The disease is often produced in young horses, from their being made to go too fast (not necessarily long journeys) before they have been properly conditioned by previous walking exercise. Injuries to other parts of the limb, causing the animal to be confined to a small place for a long time, may, from the inaction, produce not only navicular disease, but also laminitis, seedy foot, contraction, or an atrophied state of the hoof, the result of perverted nutrition consequent upon a congested state of the vessels of the feet. But the cause of causes is the pace, heavy weight, and excessive exertion over hard roads, producing concussion and compression of the navicular bone.

Pathology.—I have stated before, that it has been long taught by some that the disease commences in the synovial membrane covering the cartilage; however, that cannot be, as there are no synovial membranes covering articular cartilages.

Neither can it be, as the late Professor Dick taught, sprain of the tendon, for when a tendon is subjected to repeated strains sufficient to produce lameness, thickening instead of attenuation is the result. Another important point to be recognised in the consideration of diseases of this joint is, that there is no primary disease of the articular cartilages, for pathological anatomy teaches us that all the changes that are found in it are secondary to some other affection of the bone; there is no such thing, therefore, as primary ulceration of the cartilages; when cartilage is diseased, it is from the extension of mischief from the bone beneath. Articular cartilages are not vascular, they are nourished by cell imbibition.

The first stage of navicular disease is that of congestion of the bone, and it may be so slight as to quickly pass away with a little exercise; but if the same cause is still in operation, the congestion

will be renewed from time to time, until a low form of inflammation is set up, and the nutrient properties of the bone interfered with, as well as the secretions of synovia; this stage of the disease causes an aching pain, which interferes more or less with the action of the animal, depending on the degree of congestion. Now this state of things may exist for months, with but slight lameness, and that of an intermitting character. If the horse is now put under proper treatment, and allowed sufficient time for the vessels to recover their tone, the animal will be as sound as before it occurred; but, on the other hand, if the horse is not properly treated, and this congested state allowed to exist for a long time, it will be apt to inflame under the influence of some trivial exciting cause, and quickly to run into the degenerative state: this usually commences in the centre of the bone, where the nutrient action is lowest; as long as the inflammation is kept up, the destructive action will continue. The more the vitality of a tissue is reduced, the less appears to be the degree of inflammation required to produce disintegration and ulceration of it; indeed, if the vitality of a part be sufficiently lowered, it may fall into a state of ulceration with so slight a degree of inflammation as scarcely to be appreciable, the ulcerative action arising from disintegration depending upon a want of nutrition, the first stages of which are softening and enlarging of the cancellated structure, the cells break up, absorption takes place, producing the first stage of molecular death, or what is termed dry caries; in some cases, this process goes on until a considerable portion of the internal structure of the bone is destroyed without producing any granular degeneration of the articular surface of the cartilage; in this stage the congested state of the vessels are generally plainly to be seen, by the naked eye, through the cartilage. The bone, when in this inflamed state, is capable of affecting the tendon from contact, producing a gelatinous degeneration of the fibres, or a kind of dry ulceration, which has hitherto been mistaken for laceration, the result of sprain and friction. I find that when the disease has been communicated to the tendon by the inflamed bone, it may progress in the tendon, and the bone recover its healthy structure; or if the bone has been much diseased (articulatory surface excepted), it may be completely repaired, at the same time that the disease is progressing in the tendon, but these cases are rare and exceptional. I have two or three specimens. I am also of an opinion, that nature is capable of repairing the tendon when not extensively diseased, seeing how quickly injured tendons in other parts of the leg are repaired.

In my investigation I have not found a case where the commencement of the disease was not clearly traceable to the bone. At one time I thought that it did occasionally commence in the tendon from compression, the result of excessive work perverting the nutritive properties of the tendon at that particular part.

In some cases the perverted nutrition of the bone produces granular degeneration, first of the natural cartilage cells which are imbedded in the hyaline matrix, and secondly of the hyaline matrix

itself. Let a cartilage cell undergo this granular degeneration, and the granules by accumulation and multiplication form a cavity in the hyaline matrix; then let this cavity burst on the surface of the cartilage into the joint, and an excavation which can be seen by the naked eye is at once visible, and a so-called ulcer is produced. In an early stage of disease, this granular degeneration may only be detected by a microscopical examination. Yet in that early stage the microscope will always detect a spot of degenerative change taking place in that part of the tendon which has been in opposition with the ulcerative spot of the cartilage. Where the degenerative change has taken place in the bone, cartilage and tendon, yellowish plastic matter is often thrown out, which unites that portion of the tendon which has undergone the degenerative change with the diseased structure of the cartilage and bone; in some cases only a few of the ulcerated fibres become attached to the ulcerated surface of the bone; in other cases the entire articular surface of the bone and tendon become firmly adhered, producing an anchylosed joint, after which the pain is much lessened, but the poor animal goes in a very stilty manner, and not fit to go beyond a walking pace. In other cases the ligaments of the navicular bone, and the tendon, become ossified to the coffin-bone, also forming an anchylosed joint. In some cases the degenerative change goes on in the tendon (without the plastic process being set up) until there is not one half of the articulating part of it left, yet it seldom becomes ruptured unless the nerves are divided. By the specimens it will be seen that nature is capable of repairing almost any amount of disease of the internal structure of the bone.

As soon as the inflammation is entirely subdued, the vessels take on healthy action and begin to repair the diseased structure by an effusion of lowly organised lymph, which gradually becomes converted into bone of a porcelaneous character. This process of repair is well represented in every stage, both in the wet and dry specimens.

Some of them have almost entirely undergone the porcelaneous process of repair, and appear to have performed the ordinary functions of the bone as well as before the disease occurred. Such favorable results can only occur in cases where the articulatory surface of the bone and cartilage have not taken on the diseased process sufficiently to produce an ulcer. Cartilage when diseased has not the power of regeneration; the small spicula on the articulatory surface of the cartilage is the result of the reparative process of the bone.[1]

There are a few specimens of fractured navicular bones, but they mostly belonged to horses which had undergone the operation of neurotomy.

Treatment.—First endeavour to ascertain the history of the case,

[1] [It is only just to the professors of the schools that we should state that for many years past no such teaching as Mr. Broad alludes to has found a place in their lectures. It would thus appear that Mr. Broad is entirely misinformed respecting the views which are held by the profession in general of the pathology of navicular disease.]

upon which, and finding that the lameness is confined to one foot, and has only existed a few weeks, and that it is not of a very severe character, that there is no altered structure of the foot, no straight or knuckling pastern, or any other sign to excite suspicion that the disease has existed a long time, you may fairly presume that it is in its congestive stage, in which state many cases remain months without producing much change in the structure of the bone, or passing into the ulcerative stage, or affecting the articulatory surface of the bone or cartilage.

As I have before stated, and which can be seen in the morbid specimens, Nature is capable of repairing any amount of injury to the internal structure of the bone, provided that the disease has not affected the articulatory surface of the bone or cartilage.

The treatment which I have adopted with very great success for the last twenty-five years, has been a cold water bath, with the water deep enough to reach the fetlock joints, in which the horse is tied up four hours in the morning and a like period in the afternoon, which is continued for a month or six weeks. As a rule the lameness is removed in from two to three weeks; but it is not advisable to discontinue the use of the bath immediately the lameness has left, otherwise there will be danger of a relapse. It is essentially necessary that the horse should have a loose box during the time of the bath treatment.

Unless the case has been a very slight one, a longer rest in a loose box is necessary, to allow the vessels to recover their tone.

Should the case be one in which the destructive process had commenced in the structure of the bone, the treatment will in all probability stop that diseased action, and allow nature to commence the reparative process; but as that is a slow one, it will require a longer rest than when the bone is only congested or inflamed.

I have occasionally had a case which has had the use of the bath for two or three weeks with but little benefit; under these circumstances, I apply an active blister round the coronet, and turn the horse into a large loose box.

Bleeding in the foot, thinning the sole, rasping the wall away at the quarters, or any other of the mutilations which used to be practised for the treatment of this disease, are a positive injury instead of a benefit. I have not recommended bleeding in the foot for some years past, as I am not acquainted with any disease which requires it.

I have many times known horses to be lame from navicular disease for several months, yet ultimately become quite sound. Some years since I could not satisfy myself of the state of the joint to admit of such results, and I have no doubt that there are members present who have been equally perplexed under similar circumstances.

When the articulatory surface of the bone and cartilage is ulcerated, treatment can only be palliative, restoration to soundness is impossible; but such cases are often enabled to work comparatively sound, if they are made to stand in water or wet clay during the

part of the day they are not working. When they become too lame to work perform the operation of neurotomy, and unless this is done properly it will be only a disappointment. Prepare the horse by keeping him on low diet for several days, at the same time keeping the leg well bathed with cold water; the night before operating give a mild dose of physic, and for an hour before operating apply the cold water douche. When the leg is well prepared, the operation can be much quicker and better performed, as there is not the amount of bleeding. One of the frequent causes of the failure of the operation arises from the small portion of nerve taken out. If a leg is not well prepared, and only about half an inch of nerve taken out, the probability is, that there will be a large amount of inflammation set up in the leg, in which the nerves will participate. Nerve matter will be thrown out, and the divided ends again united within two months. I have seen many such cases. I advise that not less than an inch and a half of the nerve be taken out, after which, sew up the wound with three or four stitches of fine iron wire, apply to the wound immediately a carbolic dressing of the strength of 1—20, and repeat it daily for a few days, as it tends to promote the healing of the wound by the adhesive process; cold water applications are also beneficial. In all stages of navicular disease, shoe with leather soles; and if the horse picks his toes into the ground, which is very commonly the case, turn up the toes of the shoes, which is commonly termed Frenching.

The discussion was commenced by *Mr. Greaves*, who said they were all indebted to the President for his very interesting paper on one of the most important diseases in connection with their daily duties. Mr. Broad was also entitled to the thanks of the profession for the paper he read last year, on another disease of the foot, "Laminitis," for which the treatment was entirely new and successful. Mr. Broad had given them new ideas on three of the most important diseases of the foot of the horse. He (the Speaker) thought veterinary surgeons could not learn too much of their profession, for it was generally found that those who studied the science closely were the most successful practitioners. Mr. Broad's paper was a step in the right direction, though he was sorry to see that it was necessary that he should be president and essayist. With respect to the disease, he had arrived at the same opinions as the President, though for some time he had doubted whether the disease could be cured, and he thought that Mr. Broad, in affirming that it could, had taken a most courageous step. He (the speaker) thought that "navicular" disease, was, in many instances, hereditary, but that it could be cured when ulceration had taken place was a novel idea.

The *President* said that the process of the disease was very slow, and he pointed out the advantages of adopting the cold bath treatment. The paper was entirely his own, founded on the specimens before him and his experience.

Mr. Broad, jun., did not place implicit reliance in the theory of

the hereditary taint. He rather thought that navicular disease was occasioned by concussion and other causes.

Mr. Dobson said the thanks of the whole veterinary profession were due to the President for the way he had brought forward this subject. Mr. Dobson spoke of the importance of pathology, and thought it not improbable that there was a two-fold or even a three-fold origin of navicular disease, but he was not inclined to think with some that "hereditary taint" was a convenient term.

Mr. Strange gave his experience of the use of the cold bath in treatment for navicular disease. In every case in which he had used the bath he had met with the greatest success. As to concussion being the only cause, he had cases where horses had been kept in the stable for a long time, and then come out lame with the disease.

Mr. Raddle said he thoroughly appreciated the paper and endorsed the views therein expressed; mal-predisposition did not operate manifestly in the production of navicular disease. Predisposition operated to a greater extent than many gave it credit for, but he thought there must be some existing cause before the disease was established. He now begged to apoligise to Mr. Broad for having so strongly opposed the theory and practice advocated by him in his last year's paper on "Laminitis," for he had since adopted it and proved it most successful.

Mr. Stock said he had great opportunities of seeing the beneficial effects of Mr. Broad's plan of treating navicular disease, and he did not know of any other method of treatment which could be compared with it.

Mr. Broad, jun., speaking as to the high and low nerve operation, expressed his partiality for the former mode, as he had seen so many cases of failure resulting from the other.

Mr. Thomas was of a contrary opinion, and said he had had successful operations with the low treatment.

The *President* said that the "low" operation was more difficult to perform than the "high" operation, and the failures were too many in the "low" operation for him to advise its practice.

A technical discussion ensued on the "nerve" operation, in which the Secretary and other members took part; after which a vote of thanks was accorded to the President for exhibiting his specimens and reading his able paper. It was resolved that the annual meeting of the society should be held at Taunton on the 8th of June, when the Bath and West of England Society would hold its exhibition in that town, and Mr. Barker consented to read a paper at the meeting.

At the conclusion of the business, the members sat down to a capital dinner at the hotel, admirably served by Miss Hampton. Mr. T. D. Broad presided, and Mr. J. M. Broad occupied the vice-chair. Several toasts were proposed and responded to, and a very agreeable evening was spent. J. A. COLLINS, *Hon. Sec.*

THE LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

The twenty-second quarterly meeting of the Liverpool Veterinary Medical Association was held at the Medical Institution, Hope Street, on the evening of Friday, November 12th, 1869.

The members having partaken of refreshment, which the President with his customary liberality had provided for them, on this as on each previous occasion of meeting, the chair was taken by Thomas Greaves, Esq., of Manchester, P.R.C.V.S., and President of the Association.

Present:—Messrs. Morgan, Heyes, Ackroyd, Elam, Harwood (Liverpool), Peter Taylor and Anderson (Manchester), Storrar (Chester), Whittle (Worsley), W. C. Lawson (Woolton), H. J. Cartwright (Wolverhampton), Woods (Wigan), Dobie (Birkenhead), and the Secretary.

Letters were acknowledged from Messrs. Cartwright (Whitchurch), Dray (Leeds), Naylor (Wakefield), Lewis (Crewe), T. Taylor (Manchester), J. Sumner (Liverpool).

The minutes of the previous meeting having been read and confirmed,

The President said it was a source of regret to him that circumstances had on this occasion necessitated his being in the somewhat anomalous position of chairman and essayist. The situation was certainly *not* one of his own seeking; doubtless the members were aware, that his time had of late been considerably occupied by extraneous business matters, and he trusted they would accept that short explanation as an apology for the brevity of the paper he was about to read to them.

VOMICÆ IN THE HORSE.

Percival, in his "Hippopathology" says, that, "Putting accidents and lameness out of the question, we shall find a large majority of the cases presented to us for treatment to be diseases of the respiratory apparatus, and the most fatal of them to be those which attack the lungs and their enveloping membrane, the pleura. These diseases in horses, by the rapidity of their course,—in man they are apt by slow degrees to bring their victims to an end,—while they will destroy horses even after a few hours' duration, and in despite, too, of every measure which medical skill can devise."

It is not my intention to-night to offer you a long description of the anatomy, physiology, and pathology of the several organs which are involved in the phenomenon of respiration, as I intend to confine myself as strictly as possible, and endeavour to lead your thoughts to one special diseased condition of the lungs, viz., vomicæ.

Vomicæ is a word used to define a specific condition of the lungs,—

a condition in which certain clearly defined and circumscribed parts of the lung tissue undergo a process of disorganization and decay. The whole of the substance of the lungs may be in a diseased condition from subacute inflammation; but it is only in particular spots that we find indurated lumps called tubercles, at various distances from each other, varying in size probably from a marble to a large apple. In some of these tubercles a blackish, bloody, and fœtid matter is found, in others pure pus, in others again a sort of inspissated matter of a cheeselike consistency. In other words, the texture of the structure is just changing into matter or breaking up. Tubercles, originally distinct from each other, approximate as they increase in size, and ultimately unite and form tumours in the centre of the inflamed part; the products effused during the process of inflammation will also begin after a time to lose their vitality, to break up and liquefy. This may take place about three or four weeks after the horse has been laid up; textures so highly organized as the pulmonary are under the influence of typhoid pneumonia for only a short time, are almost certain to undergo active decomposition, apparently spontaneous softening and disorganization; this is indicated by fetid breath suddenly manifesting itself. Professor Dick considered that abscesses within the lungs are generally of rapid formation. They may be caused by an ordinary acute attack of inflammation, and occasionally by epidemic catarrh progressing in an insidious or obscure form; but the most frequent cause of all is a latent condition dependent upon unhealthy diathesis produced by hard work, frequent exposure to cold and neglect, in conjunction with constantly standing in a warm, foul, close, and perhaps undrained stable, where the atmosphere is impregnated with that which is injurious to health and destructive to life. It may also be produced by pyæmia.

I have said vomicæ may be the result of inflammatory action in the lungs; these beautiful spongy organs, composed of elastic and contractile tissues, which are never at rest day nor night so long as life lasts, whose function is perpetually to eject carbonic acid gas from the system, and to produce oxygenated blood; these vital organs are now suffering from a debilitated state of the capillaries, and an excited action in the arterial vessels; or, in other words, perverted natural action. This stage may have been, nay usually is, preceded by a simple cold; the first divergence from health observed is, that the horse is feverish, a state which is closely followed by sore throat, cough, and nasal discharge. In the great majority of these cases a subsidence of the disease takes place in a week or ten days, and complete restoration to health is the result. But some few of these ordinary cases do not terminate thus; they hang on hand; the fever continues, the pulse is not small, but it is soft and weak, 60 to 72 beats per minute; mouth not very hot; membranes discoloured. Occasionally clammy tongue and foul odour from mouth, breathing slightly accelerated, and a tendency to cold ears and cold skin exists. The animal eats very sparingly; day after day he is found in a stationary condition; there is a heaviness and a languor about

him, which give alarm to the well-informed practitioner, for these symptoms are generally, though not always, an indication that the disease has made dangerous, if not fatal progress. While the disease progresses, the blood becomes loaded with poisonous materials, which produce their malignant effects upon the whole system, and every organ in the body participates in the morbid change; but more especially the parenchyma of the lungs for the lining membrane of the air-tubes and air-cells having been more or less in a congested or inflamed state day and night for several days has now become thickened. The breathing becomes slightly more accelerated, but not much more so: there is a brownish-yellow discharge from the nostrils, and a low suppressed grunt is occasionally heard. A perceptible increase of languor and dejection takes place; percussion evinces a heavy dead sound, and the respiratory murmur may be distinctly heard; these, and other symptoms, tell any experienced man the whole history of the change which is taking place in these vital organs; morbid action is insidiously going on; the air-cells are becoming more and more pressed together; a loss of resiliency supervenes; and interstitial deposit takes place, which has a most destructive tendency. This tuberculous deposit may be in the capillaries; the lining membrane of the capillaries have been subjected to inflammation more or less severe now for many days, has become thickened, and their structure weakened. I can easily conceive them becoming accidentally choked up at specific points, a clot forms at sundry points in the parenchyma of the lungs, a sort of nucleus exudation through the walls of the capillaries takes place, and the minute tissues next to it become acted upon by this interruption; endosmosis and exosmosis is no longer possible at these points; tubercles form, some run into tumours, and abscesses follow in consecutive course. The chemical affinity binding the elements that form these substances together becomes so feeble that it is only necessary to continue to apply the exciting agent to ensure molecular or atomic motion being aroused and extended throughout the mass; then comes into play the intimately related process of fermentation,—for bear this in mind, that putrefaction and fermentation are not purely chemical processes, but physiological, and the chemical effects observable are the accompaniment or results of vital acts.

Whether this is the true version of this remarkable, almost inscrutable process or not, I believe it is a generally admitted theory, that pus is separated from the blood by the secreting power of the vessels of an inflamed part, which acquires a new mode of action. Sir Astley Cooper said in his lectures: "If I were to hazard a theory upon this subject, I should say, that pus was composed of the constituent parts of the blood slightly changed in their character by inflammation."

It is true scrofulous abscesses, or chronic suppuration, may have an existence without having been preceded by inflammation. Dr. Hunter called these "Collections of extraneous matter." We may have the same thing in irregular strangles. But it is evident that

the same state of the system (whatever that may be) that calls one tubercle into existence may generate an infinite number. When laudable pus is injected into the veins, even to the amount of four ounces, it has been found to cause no formation of internal abscesses, but that it is destroyed or disintegrated in its course through the circulation, burnt up in the lungs or expelled by the other excretory organs exactly in the same manner as other spent animal constituents are. It is found, however, that if there exists a debility of constitution in an animal suffering from abscess, or where there is formation of pus after an accident or a surgical operation, or when the external surroundings are unhealthy, as bad ventilation, overcrowding, or particularly bad drainage, a metamorphosis takes place in the pus, a process which may be compared to fermentation, by which a new element is formed and held in solution in the liquor puris; which, by absorption into the system, sets up irritation in the tissues of the lungs, liver, or particular absorbent glands, which leads to the true formation of abscesses in these structures.

Professor Tuson, in his lecture says, "As it can be demonstrated that putrefactive processes are capable of charging our atmosphere with animal and vegetable beings which are *probably*, also with gaseous and vaporous bodies which are *certainly* detrimental to the health of man and the lower animals, it becomes a matter of literally vital importance to devise means by which the development of these noxious products of putrefaction may be prevented, and when developed they may be destroyed, or so altered as to render them incapable of doing harm." For this purpose he recommends carbolic acid, chlorine gas, and wood charcoal, and explains how they can be used at 567 and following pages in the *Veterinarian* for 1866.

Mr. Haycock, in his works, says, "An accurate knowledge of physiology can alone enable us to obtain an accurate knowledge of pathology, and until we fully understand the physiology of fibrin, a correct theory of inflammation cannot be deduced." In another place he says, "The forces which impel the blood over and through the organism are of a vital and mechanical nature, the latter being dependent upon the entirety of the former for their power of active exertion during the life of the organism, so that the entire power of the organism to resist disease centres itself in the vital power, the mechanical forces we allude to arise from the impulse of the heart's action upon the vital fluid, and the pressure of the walls of the bloodvessels upon the fluid within caused by the elasticity and contractility of these vessels; but it must be clear to any one who reflects upon the question, that the first impulse received by the blood arises in the higher animals at least from the living force resident within the heart and larger bloodvessels; and although vital force and physical force exist in intimate association, yet vital force, is the force to which our efforts in inflammation must in the main be directed to understand, and in our treatment to uphold." In another place he says, "By attention to the animal during the incipient stage of the disease, hundreds of valuable horses would be

annually saved which now die." I fully and entirely agree with Mr. Haycock in this view of the nature of inflammation, and the great necessity of commencing early with remedies which will give artificial help to the vital force.

Percival says, "A young horse will undergo acute pneumonia or pleuro-pneumonia; and should he not sink in the congestive stage, or have his disease cut short by treatment, will die during the second, or third, or fourth week, with his chest full of water, and intersected albuminous effusions, and his lungs condensed and hepatized; but an old horse, with stamina to endure a conflict between disease and remedy, will hold out whilst tubercles and vomicæ are generated in his lungs, and in the end die of phthisis."

Some of you will be ready to ask what I consider the pathognomonic symptoms attendant on the development of vomicæ are? I reply, "A perceptible failing or sinking pulse, and fetid breath." The formation of vomicæ must have been preceded by inflammation of a peculiar character, called typhoid pneumonia; other kinds of inflammation may ravage the lungs with an intensity much greater than typhoid inflammation does, and end in death without vomicæ, or the slightest approach to vomicæ supervening. This may be explained by there being force in the circulation in this case preventing a choking up of the capillaries. This typhoid pneumonia must have been existing and insiduously progressing three or four weeks before the lumps called tubercles lose vitality, which commences in their centres or nucleus; spontaneous softening and decomposition takes place: this is vomicæ. At this precise period a perceptible change takes place in the character of the pulse; about the same time fetid breath is detected, which rapidly increases, and in twelve or twenty-four hours death puts an end to our patient's sufferings. This condition of the lungs may be accompanied, and often is, by disease of the pleura, and effusion into the pleural cavity, but this is not by any means necessarily the case.

Treatment of Vomicæ.—In respect to this part of my subject, when vomicæ have become developed, I have no treatment to recommend—no known treatment can avail. The only way in which we can be of any service to our patient and to our employer, is to use the time well at the beginning of the case, use every means in our power to prevent congestion or inflammation taking place; but if either of these conditions have become developed, employ every available means to prevent their continuance, and for this purpose the best remedies known are diffusible stimulants, to rouse and stimulate the nerves of the chest, and by these means disperse the congestion which is now settling in the parenchyma of the lungs. You must use them unsparingly, both internally and externally, and pure cold air to breathe. I give spt. Nitrous Ether, and Tincture of Pimento, 1 oz. each, in 6 ozs. of warm water, two or three times a day; also Carbonate Ammonia, two drachms made into a ball with ginger and syrup once or twice a day. A rug wrung out of almost boiling water enveloping the chest to be repeated every two hours, with a dry

cloth over it. Bran tea to drink. Do not clothe too much,—this is a mistake ; it is so proved by the great benefit derived from clipping our patient if he has thick coat. I never put bandages on the legs, or hood on the head. If the ears are cold I always stimulate them ; I attribute great importance to this. If my patient is not better in three or four days, I stimulate the sides daily with some liniment, and after half an hour put on the hot rugs again. This is the most successful mode of treatment I am acquainted with.

Mr. Morgan hoped that a very general discussion would follow the reading of so ably written a paper upon so interesting a subject as vomicæ. In his experience it was not a very uncommon occurrence for horses suffering in the first instance from treads, and other simple wounds, to die from pyæmia and vomica—a fatal termination often resulting in a short time from the first appearance of alarming symptoms. He thought such undesirable endings to apparently insignificant causes should teach veterinary surgeons, in all instances, to use every endeavour to promote the secretion of laudable pus. He related a case of pulmonary congestion, associated with disease of typhoid character, terminating in abscess, in a mare he was called to attend for Mr. Heyes, during that gentleman's absence from home. The mare was plethoric, and presented the symptoms ordinarily met with in such cases : she had little appetite, very slight cough, pulse ranged between 60 and 70, and was never more than 80 beats per minute. The most remarkable features were—extreme alternations in the rapidity of breathing, and frequent variations in the colour of the membranes. During the first few days the disease seemed to be succumbing to treatment, but the mare gradually became worse and ultimately died. On *post-mortem* examination he found considerable serous effusion into the pleural cavity ; one lung was healthy, with the exception of appearances of recent congestion, the other was one mass of abscesses. He considered the animal must have had unsound lungs prior to the last attack.

Mr. Gilbert Heyes said he was the unfortunate owner of the mare, and during his absence Mr. Morgan attended her. The mare was sent from Ireland purposely for him, and he intended keeping her for his own use. When he first got her she was very poor, but throve rapidly —in his opinion too rapidly—he fancied his groom overfed her. He was induced to send her to compete at a local agricultural show, where she was successful in the roadster class. After her return he heard her cough, but subsequently to that he rode her a fast journey, and believed at that time she was perfectly sound ; indeed, so convinced was he of the soundness of her respiratory organs at that time, that if it could be positively proved to him that she had then any latent disease in her lungs, he should hesitate to give a certificate of soundness in any case. In reply to a question by Mr. Greaves, he said the mare died about three weeks after that journey.

Mr. Peter Taylor said the unbounded thanks of the Association were due to their excellent President for bringing before them such

an important subject. He (Mr. Taylor) had pleasure in according his meed of praise to the essayist, although he differed from him in opinion. He considered vomica in the lung tissue to be produced by softening of tubercle; he recognised two distinct causes for its production, first from a poisonous condition of the blood, secondly as a result from an attack of pneumonia, in which disease, if the congestive stage passes unrelieved, hepatization will follow, to which, if unchecked, softening and vomicæ succeed. Who, in our present imperfect state of knowledge, shall say what is the primary cause acting in the production of blood diseases? Who can feel satisfied that miliary tubercle is due to arrestation in the capillary circulation, or to deposition into the pulmonary parenchyma? On the other hand we can recognise more clearly the ordinary causes of simple inflammation attacking the lungs. Mr. Taylor considered the case described by Messrs. Morgan and Heyes to be more nearly related to the pneumonic than to a blood poison type of disease. Treatment should depend upon the stage the disease may be in and the symptoms presented; he advocated pure fresh air and plenty of it, extreme quietude, agents to act upon the liver, taking especial care to avoid catharsis, stimulants judiciously administered, of which he held carbonate of ammonia in high esteem, and in some cases the application of blisters.

Mr. Greaves believed the most valuable medicine we possessed for the treatment of typhoid diseases was carbonate of ammonia. He considered that this agent not only exerted a beneficial influence upon the liver, but also upon most, if not all other secerning glands. He did not advocate irritating embrocations to the skin; but attached great importance to the application of a stimulating liniment to the ears as a means of determining a flow of blood to the head, and thereby promote increased circulation in the brain, enabling it to act with more vigour.

Mr. Reynolds was in favour of the free admission of pure air, and warm clothing to whatever part of the body it was applicable, in all cases where there is a tendency to coldness of the extremities and skin accompanied with difficult respiration, as adjuncts to determine the blood from accumulating in the vital organs. He much preferred the application of oil of cantharides to mustard, ammonia, turpentine, and other exciting irritative liniments. He had repeatedly noticed that in all cases where a blister had produced copious effusion an equivalent subsidence on the more important symptoms succeeded.

Mr. W. C. Lawson coincided with the essayist upon the benefit derived from the use of hot rugs, and thought that not unfrequently more good than harm resulted from the application of irritating liniments in arousing the subdued vital energies of animals affected with typhoid diseases.

Mr. Elam said he had much experience amongst horses newly introduced into this town for omnibus work from Ireland, and had seen many cases (in horses which on arrival he had passed sound) of disease proving fatal in ten to fourteen days, the *post-mortem* exa-

mination revealing identical appearances to those described by Messrs. Heyes and Morgan. During the past two months he had attended many cases of typhoid disease involving the liver and bowels; he at first relied chiefly on the *vis medicatrix naturæ*, but opined he should have lost several of his patients had he not had timely recourse to the exhibition of diffusible stimulants. He advised keeping the body warm; ammonia and turpentine applications to the legs, and the administration of carbonate of ammonia combined with half-drachm doses of aloes.

Several of the members strongly objected to the employment of aloes in such cases.

Mr. H. J. Cartwright had no new mode of treatment to advocate; he thought well of diffusible stimulants, such as Sp. Æth. Nit.; Liq. Ammon. Acet., and occasionally Ammon. Carb. He condemned the use of aloes, and preferred cantharidine blister to ammonia and turpentine embrocations.

Mr. Whittle thought our efforts should be directed to support nature as much as possible; to this end he had administered whiskey and eggs with the best results; he gave his unqualified disapproval of any irritant applied to the skin; was favorable to the employment of the hot rug. In those cases which do not progress satisfactorily, if the coat be long he would advise clipping the sides, the adoption of light clothing, and keeping the extremities warm. In his experience, an unvarying pulse of about 72 was prognostic of an unfavorable termination.

Mr. Woods gave carbonate of ammonia dissolved in the drinking water of his patients, and found they partook of it freely; it had the effect of cleansing the mouth in addition to its other useful properties.

Mr. Storrar had been much gratified by hearing the excellent paper read; he had no recollection of seeing vomica arising from the process described by the President; he had frequently seen it, together with purulent formations in other parts of the body from absorption of pus from the umbilicus and other places. He considered it inexpedient to employ emollients where absorption is to be apprehended. He hoped some one would undertake to bring forward a paper upon pyæmia at the next meeting as a sequel to the one that had been read that evening.

Mr. P. Taylor doubted the formation of true abscess in the lungs.

Mr. Reynolds related a case in which there had been purulent discharge from the nostrils for eleven months; the horse became emaciated and was destroyed. A cavity bounded by material of cartilaginous consistency containing several pounds of inspissated pus, and also some more fluid matter, was found attached to the lung and diaphragm.

Mr. Harwood said he had lately a case under treatment which he believed was one of abscess in the lungs; the horse went off his food a little, but did not present sufficiently severe symptoms to call for a discontinuance of work; he coughed a good deal, and had a

profuse nasal discharge, which continued for three weeks, and then entirely ceased; the cough, however, which was present before the discharge appeared, continued.

Mr. Lawson had seen a clearly marked case of pulmonary abscess.

Mr. Morgan was once called in to a horse that for several months prior and to within six hours of death was to all appearance perfectly healthy; an immense abscess was found in the lungs.

Mr. Woods had never seen a case of abscess in the lungs, but in a well-bred horse placed under his care, successive abscesses continued to form all over the body; he considered the case one of bastard strangles. The horse was treated with small doses of sulphate of copper, and allowance of good food. He ultimately recovered.

Mr. Greaves said some years ago he was an unbeliever in pyæmia, but had seen reason to change his opinion, and now believed other abscesses were produced by absorption from pre-existing collections of matter. He would relate a case of pulmonary disease terminating in abscess and adhesion of the pleura, and also one of absorption producing abscess in the lung.

Case 1.—A cart horse, five years old, was brought from the country into Manchester, examined, and passed sound. In a few days he was taken ill, and in about a fortnight died. A *post-mortem* examination being made (by Mr. G.) in conjunction with another veterinary surgeon, the existence of abscess in the lungs was revealed, as well as serous effusion, and considerable adhesion between the lungs and costal pleura. Not the least instructive feature in this case (in determining, as it is often necessary to do, whether the lesions are the result of previous disease, or the effect only of the recent fatal attack) was the unorganised condition of the adventitious lymph, showing clearly its recent effusion.

Case 2.—The subject of the next case was also a five-years-old cart-horse, which presented every indication of soundness and good health, but which after having worked only half a day came in lame of the off hind leg. There was no swelling visible, nor could the precise seat of lameness then be determined. In two or three days a swelling appeared over the tuberosity of the ischium, accompanied with considerable constitutional disturbance; in the course of a fortnight a large abscess formed twelve inches lower down than the seat of original injury (it was subsequently elicited that a portion of the tuberosity of the ischium had been broken off by accident in the horse-box). The abscess was freely opened, when it was found that a probe could be passed upwards nearly as far as the anus; a seton was passed through the cavity, and the horse got sound. After the lapse of two or three months, all at once his appetite failed, "down went his head, and up went his pulse to 70 or 80." The respiration became increased, and breath fetid. Hot fomentations were applied to his thorax, and stimulants administered, but death resulted in a few days. A dozen

or more vomicæ were found in the lungs. The horse had not taken a recent cold.

The President said he had received some portions of the lungs of a cow, and a communication relating to the subject from Mr. Howell, of Rochdale; he would exhibit the specimen, and after the Secretary had read the letter, would ask the members for their opinion.

"SCROFULOUS DEPOSIT IN THE LUNGS OF A COW.

"By James Howell.

"I have this afternoon sent per rail portions of the lungs of a cow slaughtered last night in my presence. The animal was five years old, and of the short-horn breed. My attention was called to her about six weeks since, in consequence of great difficulty in breathing, accompanied by a roaring noise, the animal at same time being eager for food; the pulse normal, respiration deep, but not accelerated. I found the throat swollen, soft, or full above the larynx—nothing definite to be detected. On auscultating the chest, I pronounced her to be *grapy*, or *tuberculous* on the left side, advised blister over the larynx—the Nitro. Mur. Acid, and to keep her as well as they possibly could to make her fit for the butcher. The treatment relieved the roaring, and the cow has certainly gained flesh; yesterday evening was slaughtered, and you now have a portion of the diseased parts sent you.

"You will see there was a *conglomeration* of tuberculous matter in one piece of lung, and some *grapy* tumours that were hanging loose and some attached to the pleura costalis. All this disease was on the left side. There is a portion of lung from the right side, which has a large vesicle on it, if not ruptured in transit—that was all the abnormal appearance I could detect on the right side of chest.

"I found an abscess immediately above and a little posterior to the larynx, in a perfect sac, soft, and containing upwards of a pint of *creamy* coloured fluid or pus. You will observe the *cheesy* nature of the contents of the large mass, which assumed somewhat the nature of an abscess, as there were several ounces of fluid escaped when the mass was cut into. When you lay open the other portions, you will then be able to explain the nature of their contents.

"No doubt some of the members present have met with many similar cases; but as this opportunity of making *post-mortem* examination was afforded me, I thought it would be some little addition to the subject you have kindly consented to introduce."

It was the unanimous opinion of the members, that the animal from which the portion of lung had been taken, was affected with phthisis pulmonalis, and that it was not a very uncommon disease. On close examination of part of the right lung, some small miliary tubercles were found. The tubercles in the portions of the left

lung were large, and contained matter in various stages of metamorphosis, in some the material was cheesy, in others more fluid and puriform.

Mr. Storrar stated that, in his opinion, tubercle in cattle was a very hereditary disease, affecting not only the lungs and pleura, but also the peritoneum proper and omentum. He had known a whole family so affected, and had so frequently seen its existence associated with abscess in the laryngeal region, that he traced a distinct connection between the two.

A cordial vote of thanks to Mr. Howell was proposed by the *President*, seconded by *Mr. Woods*, and unanimously accorded.

Mr. Greaves said, that the time had now arrived for him to vacate the Presidency of the Association, which position he had the honour of occupying for the past year. He cordially thanked those gentlemen who had supported him during his term of office, and hoped his successor would be still more warmly supported.

Mr. Elam proposed a vote of thanks to the President for the ability, courtesy, and untiring attention with which he had invariably conducted the duties pertaining to his office, and which were duly appreciated by every member. In seconding the proposition, *Mr. Taylor* said mere thanks were insufficient to express the true sentiments of the members. In the capacity of President he thought the assiduous conduct of his friend, Mr. Greaves, should be upheld as an example of industry and energy, not only to the veterinary surgeons of Lancashire, but to the entire profession. The vote was most cordially endorsed by all the members.

In returning thanks, the *President* said he truly appreciated the kindly feeling of the members, and was ever pleased to exert his energies in a good cause. Alluding to the position he held as President of the Royal College of Veterinary Surgeons, he thought it would be false humility were he not to say that he did esteem it a great honour to occupy the chief place in the profession. He hoped such a juncture had now arrived, that being ably met, would ultimately conduce to the prosperity of veterinary science.

Votes of thanks were accorded to the Honorary Treasurer and Secretary, which were briefly acknowledged respectively by Messrs. Harwood and Reynolds.

The Annual Report of the Treasurer was read.

Appointment of officers for the ensuing year was then proceeded with "seriatim," and resulted in re-election of all officers to the respective duties performed by them during the past year.

Mr. Lawson gave notice, that at the next meeting he should move a resolution—

"That the tea, which had hitherto been provided at the expense of the President, should be in future paid for out of the funds of the Association."

RICHARD S. REYNOLDS,
Hon. Secretary.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The Lancashire Veterinary Medical Association held its quarterly meeting on Wednesday, October 12th, at the Trevelyan Hotel, Manchester, the President in the chair.

The following gentlemen were present:—Messrs. T. Greaves, W. Whittle, P. Taylor, Cartwright, — Woods, A. Lawson, J. Taylor, A. L. Gibson, Mr. Howell, and other gentlemen.

There being no paper to be read, the evening was spent in the relation of interesting cases which had occurred in the practices of the gentlemen present.

The President related a case that he believed to be dislocation or partial dislocation of the hip-joint; and from his description of the position of the limb, it was the general opinion that such must have been the case.

The dislocation was successfully reduced, and the animal eventually became sound.

Mr. Whittle cited a similar case in a cow, but she was destroyed.

There was an animated discussion upon elasticity, non-elasticity, and rupture of ligament, in cases of luxation of joints of the horse.

Mr. Cartwright and *Mr. Woods* both related cases of dislocation of patella in cows.

Mr. Cartwright also related some cases of breech presentation, which he had successfully treated by simply forcing the calf away without raising the hind legs.

Mr. Wood did not approve of the plan, but always endeavoured to raise the legs, and had not as a rule much difficulty.

Mr. Whittle agreed with *Mr. Woods*, and both advocated lubricating the parts when requisite with linseed oil.

Mr. Greaves cited some similar cases, one accompanied with rupture of the uterus, which of course was unsuccessful.

The discussion was also entered into by Messrs. P. Taylor, A. Lawson, and others.

Mr. Greaves read a short paper upon

VIOLENTLY DRAWN-OUT TONGUE.

I remember a horse being brought into my infirmary some years ago, with his tongue hanging six or eight inches out of his mouth; it had been protruding thus a couple of days; the incisor teeth had been champing upon it; it was nearly bitten off,—the part appeared quite dead. I took a pair of scissors, and at once amputated it; this case did well. Another case I saw in the company of a veterinary surgeon, whose patient the animal was; the tongue had been protruding several hours; the muscles appeared to have lost all their

power, and the incisor teeth were nipping the tongue, and champing upon it. This, it will be observed, is inevitable, because the various muscles which open the jaw soon tire and become utterly exhausted by their continued effort to keep the mouth open; then the jaws close as a natural consequence. The following morning that portion of the tongue hanging out beyond the teeth appeared to be perfectly dead and quite cold; amputation was had recourse to; there was scarcely any hæmorrhage, and the case did well.

Shortly after this I had a case in my own practice, in which the driver admitted that, the mare being a very headstrong mare, he could not hold her by the bit, and in a moment of temper he seized hold of her tongue, at the same time the mare snatched up her head, and he pulled her tongue so far out that she could not draw it again within the mouth. I found the tongue protruding eight or nine inches; it was not in any way torn, but the animal was utterly unable to retract it. I at once made a sling of some calico in the form of the toe of a stocking about three inches long, and from each side I had connected a strip of calico, which I carried up on each side of the face to behind the ears, and tied it just sufficiently tight to draw up the tongue inside the mouth and within the incisor teeth. In a short time she drank some water, and ate some mash with the tongue in the sling; she was a long time over it; following day the mare was better; the third day I took off the sling to wash it, the tongue protruded about three inches; I put the sling on again for three days, and again took it off to wash it, the tongue now protruded about one inch; at the end of about eight or ten days the mare was entirely recovered, and continued quite right for years afterwards.

I have had another case precisely similar to the above, and I adopted the same method of treatment with the same successful result.

All the gentlemen present entered into the discussion which followed.

There was also some little argument, which was introduced by *Mr. A. Lawson*, upon the various principles of shoeing now before the public. Taking everything into consideration, a very pleasant evening was spent.

ALFRED CHALLINOR.

Hon. Secretary.

NEW MEMBERS OF THE PROFESSION.

At the meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, which was held on Dec. 21st and 22nd, the following students of the Royal Veterinary College were admitted members of the body corporate.

Mr. Walter Henry Kemp	Canterbury.
„ Richard Alwen Thrale . . .	Croydon, Surrey.
„ Edwin Ware	Martock, Somerset.
„ John Bostock	Altrincham, Cheshire.
„ James Macer	Wiston, Huntingdonshire.

Veterinary Jurisprudence.

ACTION AGAINST A RAILWAY COMPANY.

In the Cheltenham County Court, on Friday, before Judge Sumner and a special jury, an action of considerable interest was brought against the Great Western Railway Company, for the recovery of £35 damage alleged to have been sustained by the plaintiff, Mr. Beale Brown, of Stalperton Park, a famous sheep-breeder, through the delay of the company in the conveyance of a number of sheep from Cheltenham to Hereford on the 17th of August last, being the time when a change from broad to narrow gauge was being made, by which delay the above amount was claimed as deterioration, calculated at £5 per head. Mr. Gough, of the Oxford circuit, was retained for the plaintiff, and Mr. R. S. Helps for the defence. It was alleged that the delay in question amounted to absolute cruelty, the time occupied for the journey being forty-eight hours, during which time the poor animals had been in a state of entire privation, and through sheer exhaustion their condition was entirely gone; and whereas in their original state they were valued at £8 10s., they only sold for £5 per head. A defence was raised that the plaintiff's agent having signed the consignment note the company were by its conditions relieved from all responsibility, but, on the contrary, it was held that such an agreement was unreasonable, and amounted to oppression upon the party signing it. It was further argued that the plaintiff was aware that the direct route was changed, and accordingly the time occupied was reasonable. In reply, however, it was contended that the whole distance traversed was only ninety-six miles by the farthest route. It was also urged that the company were not bound to any specified time. Ultimately the jury found for the plaintiff at the rate of £2 10s. per head. The hearing of the case occupied the greater portion of the day.

ARMY APPOINTMENTS.

Joseph Gibbs, Gent., to be Acting Veterinary Surgeon.
William Capes, Gent., to be Acting Veterinary Surgeon.
Algernon Pitcher, Gent., to be Acting Veterinary Surgeon.

THE APPOINTMENT OF INSPECTORS.

By M.R.C.V.S.

Gentlemen,—The Charter which was granted to the veterinary profession a year ago had, I presume, for its object, the raising of the social position of veterinary surgeons, and the protection of the public from empiricism and quackery.

Now, in a town a few miles distant from the one in which I reside, a respectable member of the colleges and a quack applied for the post of Inspector under the Contagious Diseases (Animals) Act. The unqualified applicant was successful.

I append a short extract from the Royal Charter, and would ask whether, in confirming such appointments, "the right hands of those who manage the nation's affairs know what their left doth."

"And we do further declare and grant, that the Veterinary Art as practised by the members of the said body politic and corporate, shall be henceforth deemed and taken to be and recognised as a profession, and that the members of the said body politic and corporate *solely* and exclusively of all other persons whomsoever, shall be deemed and taken and recognised to be members of the said profession, or professors of the said art, and shall be individually known and distinguished by the name or title of Veterinary Surgeons."

The College crest, I believe, represents a Centaur. We learn from mythology, that the Centaurs, being defeated by the Lapithæ, were driven to Arcadia, and subsequently, incurring the displeasure of Hercules, were exterminated. Now really, gentlemen, in the present anomalous state of things, unqualified men might not inaptly adopt for a crest a defeated Lapitha (there are many to be copied from the Elgin marbles), and for a motto, '*Ars inutilis*,' instead of Apollo as a presiding deity over their fortunes. I can suggest no better substitute. Can you?

Yours most obediently.

OBITUARY.

We have to record the loss of a highly respected member of the profession, Mr. Robert Barlow, of Cotgrave, Notts, who died Dec. 11th, in the sixty-seventh year of his age. Few men stood higher in the estimation of his friends and neighbours than Mr. Barlow. His loss is severely felt by all to whom he was known, either as a veterinary surgeon, friend, or acquaintance. Mr. Barlow obtained his diploma January 22nd, 1827.

We also deeply regret to have to record the death of Mr. Jno. Lawson, M.R.C.V.S., Manchester, which melancholy event took place on Dec. 19th, at his residence, Melrose House, Plymouth Grove, in that city. Mr. Lawson, who was only in the fifty-fourth year of his age, had served the office of President of the Royal College of Veterinary Surgeons, and at the time of his decease was a member of the Council. He had also held office as an examiner in the Scotch section of the Court from 1861, and previously to that time he was a member of the Board of Examiners of the Highland and Agricultural Society. His early loss is deeply lamented by a large circle of friends, both in and out of the profession, by all of whom he was very much and deservedly respected. His diploma bears date April 25th, 1837.

We append the following additional remarks received from a valued correspondent relative to this sad event.

"The announcement of the sudden death of Mr. Lawson brings us to the painful realisation that at a comparatively early age, in the vigour of manhood, and with his hand yet at the plough, death has deprived the Veterinary profession of one of its most zealous and devoted members. The cause of death was a sudden attack of apoplexy on the forenoon of the 18th, which, without any premonitory symptom, struck him down while engaged in his usual routine of business. From the moment of the attack, until his death on the morning of the 19th, he remained perfectly unconscious.

"The effects of this sad calamity cannot be expressed in words; only his grief-stricken family and those who had the happy privilege of reckoning him among their intimate friends—as also that wide circle in which he daily moved, and to which he had endeared himself by the exhibition of those qualities the possession of which ever secure affection, esteem, and respect, can appreciate the heavy and irreparable loss all have sustained. Sharing, it may truly be said, in every movement which had the advancement and elevation of the profession for its object; cheerfully giving his means and time—upon the latter of which, for very many years, the demands made by business were incessant—and holding at various periods important offices in connection with the Royal College of Veterinary Surgeons, our deceased

friend identified himself so intimately with the interests of the Body Corporate, that we can scarcely hope the void created by his premature demise will be readily filled up. With honour to himself and credit to the profession, he fulfilled the duties pertaining to the presidential chair. As vice-president and member of Council he was for many years assiduous in his attendance, earnest in his deliberations, and honest in the expression of his opinions at the meetings in Red Lion Square, while as a member of the Examining Board for Scotland his greatest ambition was to perform his duty fairly and efficiently.

"Cut off when a life of almost unexampled industry had begun to hold forth the prospect of some relief from the toil and care of a professional career—such as ours must always be—it is a matter for regret that his leisure moments were so few as to preclude his anxious desire to give some of the results of his great experience and careful observation to the world being gratified.

"Though almost overwhelmed with the efforts required to fulfil his business engagements, and with but little opportunity for keeping himself fully informed of the progress of those sciences which are more or less allied to veterinary medicine, no one could feel a greater interest in everything relating to them, more particularly their practical bearings on our special science.

"Mr. Lawson's reputation as a veterinary surgeon deservedly stood very high in public estimation, and extended far beyond his own immediate neighbourhood; and his integrity, candour, and honesty of purpose were not among the least of his many sterling qualities. The good work he did in public was far exceeded by that which he unselfishly, and nearly always spontaneously, performed in private; and probably remembering his own early days he has been a mainstay of encouragement, and a source of good advice and assistance, to many a young member of the veterinary profession who was about to embark in, or had already commenced to struggle with, the difficulties and responsibilities of his new life. To these his death must prove a grave calamity, for he was looked upon by them more, perhaps, as a kind father than a benefactor. Nothing now remain to them but the treasured recollections of his genial, honest countenance and his many endearing traits of character. The story of his life shows the influence and the success of indomitable energy, honesty, sobriety, and gentlemanly demeanour. With them, and with the Veterinary profession in general, we are sure that the memory of our deceased friend will ever be deeply inspiring and fondly cherished."

Our obituary has to be added to by a record of the death of Mr. Jno. McDermott, M.R.C.V.S., Belfast. His diploma bears date, May 4, 1861.

NEW MEMBERS OF THE PROFESSION.

At the meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, which was held on Dec. 21st and 22nd, the following students of the Royal Veterinary College were admitted members of the body corporate.

Mr. Walter Henry Kemp	Canterbury.
„ Richard Alwen Thrale . . .	Croydon, Surrey.
„ Edwin Ware	Martock, Somerset.
„ John Bostock	Altrincham, Cheshire.
„ James Macer	Wiston, Huntingdonshire.

Veterinary Jurisprudence.

ACTION AGAINST A RAILWAY COMPANY.

In the Cheltenham County Court, on Friday, before Judge Sumner and a special jury, an action of considerable interest was brought against the Great Western Railway Company, for the recovery of £35 damage alleged to have been sustained by the plaintiff, Mr. Beale Brown, of Stalperton Park, a famous sheep-breeder, through the delay of the company in the conveyance of a number of sheep from Cheltenham to Hereford on the 17th of August last, being the time when a change from broad to narrow gauge was being made, by which delay the above amount was claimed as deterioration, calculated at £5 per head. Mr. Gough, of the Oxford circuit, was retained for the plaintiff, and Mr. R. S. Helps for the defence. It was alleged that the delay in question amounted to absolute cruelty, the time occupied for the journey being forty-eight hours, during which time the poor animals had been in a state of entire privation, and through sheer exhaustion their condition was entirely gone; and whereas in their original state they were valued at £8 10s., they only sold for £5 per head. A defence was raised that the plaintiff's agent having signed the consignment note the company were by its conditions relieved from all responsibility, but, on the contrary, it was held that such an agreement was unreasonable, and amounted to oppression upon the party signing it. It was further argued that the plaintiff was aware that the direct route was changed, and accordingly the time occupied was reasonable. In reply, however, it was contended that the whole distance traversed was only ninety-six miles by the farthest route. It was also urged that the company were not bound to any specified time. Ultimately the jury found for the plaintiff at the rate of £2 10s. per head. The hearing of the case occupied the greater portion of the day.

ARMY APPOINTMENTS.

Joseph Gibbs, Gent., to be Acting Veterinary Surgeon.
William Capes, Gent., to be Acting Veterinary Surgeon.
Algernon Pitcher, Gent., to be Acting Veterinary Surgeon.

THE APPOINTMENT OF INSPECTORS.

By M.R.C.V.S.

Gentlemen,—The Charter which was granted to the veterinary profession a year ago had, I presume, for its object, the raising of the social position of veterinary surgeons, and the protection of the public from empiricism and quackery.

Now, in a town a few miles distant from the one in which I reside, a respectable member of the colleges and a quack applied for the post of Inspector under the Contagious Diseases (Animals) Act. The unqualified applicant was successful.

I append a short extract from the Royal Charter, and would ask whether, in confirming such appointments, "the right hands of those who manage the nation's affairs know what their left doth."

"And we do further declare and grant, that the Veterinary Art as practised by the members of the said body politic and corporate, shall be henceforth deemed and taken to be and recognised as a profession, and that the members of the said body politic and corporate *solely* and exclusively of all other persons whomsoever, shall be deemed and taken and recognised to be members of the said profession, or professors of the said art, and shall be individually known and distinguished by the name or title of Veterinary Surgeons."

The College crest, I believe, represents a Centaur. We learn from mythology, that the Centaurs, being defeated by the Lapithæ, were driven to Arcadia, and subsequently, incurring the displeasure of Hercules, were exterminated. Now really, gentlemen, in the present anomalous state of things, unqualified men might not inaptly adopt for a crest a defeated Lapitha (there are many to be copied from the Elgin marbles), and for a motto, '*Ars inutilis*,' instead of Apollo as a presiding deity over their fortunes. I can suggest no better substitute. Can you?

Yours most obediently.

OBITUARY.

We have to record the loss of a highly respected member of the profession, Mr. Robert Barlow, of Cotgrave, Notts, who died Dec. 11th, in the sixty-seventh year of his age. Few men stood higher in the estimation of his friends and neighbours than Mr. Barlow. His loss is severely felt by all to whom he was known, either as a veterinary surgeon, friend, or acquaintance. Mr. Barlow obtained his diploma January 22nd, 1827.

We also deeply regret to have to record the death of Mr. Jno. Lawson, M.R.C.V.S., Manchester, which melancholy event took place on Dec. 19th, at his residence, Melrose House, Plymouth Grove, in that city. Mr. Lawson, who was only in the fifty-fourth year of his age, had served the office of President of the Royal College of Veterinary Surgeons, and at the time of his decease was a member of the Council. He had also held office as an examiner in the Scotch section of the Court from 1861, and previously to that time he was a member of the Board of Examiners of the Highland and Agricultural Society. His early loss is deeply lamented by a large circle of friends, both in and out of the profession, by all of whom he was very much and deservedly respected. His diploma bears date April 25th, 1837.

We append the following additional remarks received from a valued correspondent relative to this sad event.

"The announcement of the sudden death of Mr. Lawson brings us to the painful realisation that at a comparatively early age, in the vigour of manhood, and with his hand yet at the plough, death has deprived the Veterinary profession of one of its most zealous and devoted members. The cause of death was a sudden attack of apoplexy on the forenoon of the 18th, which, without any premonitory symptom, struck him down while engaged in his usual routine of business. From the moment of the attack, until his death on the morning of the 19th, he remained perfectly unconscious.

"The effects of this sad calamity cannot be expressed in words; only his grief-stricken family and those who had the happy privilege of reckoning him among their intimate friends—as also that wide circle in which he daily moved, and to which he had endeared himself by the exhibition of those qualities the possession of which ever secure affection, esteem, and respect, can appreciate the heavy and irreparable loss all have sustained. Sharing, it may truly be said, in every movement which had the advancement and elevation of the profession for its object; cheerfully giving his means and time—upon the latter of which, for very many years, the demands made by business were incessant—and holding at various periods important offices in connection with the Royal College of Veterinary Surgeons, our deceased

friend identified himself so intimately with the interests of the Body Corporate, that we can scarcely hope the void created by his premature demise will be readily filled up. With honour to himself and credit to the profession, he fulfilled the duties pertaining to the presidential chair. As vice-president and member of Council he was for many years assiduous in his attendance, earnest in his deliberations, and honest in the expression of his opinions at the meetings in Red Lion Square, while as a member of the Examining Board for Scotland his greatest ambition was to perform his duty fairly and efficiently.

"Cut off when a life of almost unexampled industry had begun to hold forth the prospect of some relief from the toil and care of a professional career—such as ours must always be—it is a matter for regret that his leisure moments were so few as to preclude his anxious desire to give some of the results of his great experience and careful observation to the world being gratified.

"Though almost overwhelmed with the efforts required to fulfil his business engagements, and with but little opportunity for keeping himself fully informed of the progress of those sciences which are more or less allied to veterinary medicine, no one could feel a greater interest in everything relating to them, more particularly their practical bearings on our special science.

"Mr. Lawson's reputation as a veterinary surgeon deservedly stood very high in public estimation, and extended far beyond his own immediate neighbourhood ; and his integrity, candour, and honesty of purpose were not among the least of his many sterling qualities. The good work he did in public was far exceeded by that which he unselfishly, and nearly always spontaneously, performed in private ; and probably remembering his own early days he has been a mainstay of encouragement, and a source of good advice and assistance, to many a young member of the veterinary profession who was about to embark in, or had already commenced to struggle with, the difficulties and responsibilities of his new life. To these his death must prove a grave calamity, for he was looked upon by them more, perhaps, as a kind father than a benefactor. Nothing now remain to them but the treasured recollections of his genial, honest countenance and his many endearing traits of character. The story of his life shows the influence and the success of indomitable energy, honesty, sobriety, and gentlemanly demeanour. With them, and with the Veterinary profession in general, we are sure that the memory of our deceased friend will ever be deeply inspiring and fondly cherished."

Our obituary has to be added to by a record of the death of Mr. Jno. McDermott, M.R.C.V.S., Belfast. His diploma bears date, May 4, 1861.

THE

VETERINARIAN.

VOL. XLIII. No. 506. FEBRUARY, 1870. Fourth Series. No. 182.

Communications and Cases.

EXTRAORDINARY ENLARGEMENT OF THE LIVER OF A DOG FROM DEPOSIT OF FATTY MATTER.

By Messrs. Gowing & Son, M.R.C.V.S., Camden Town.

A few days ago the subject of the disease above referred to, a Skye terrier, 12 years of age, was brought to the infirmary for treatment, in consequence of an irritable condition of stomach, which induced constant vomiting immediately after the animal swallowed any kind of fluid; even cold water had this effect. It was ascertained that the bowels had not acted for some time, and there was great prostration present.

To meet the urgent symptoms minimum doses of creosote were given, but still the vomiting continued, and the prostration became more extreme. In the next instance hydrocyanic acid was prescribed, in doses of one to two minims in water, in order to allay the irritation and sickness which prevented the effective administration of any food or medicine. Some amount of success attended the employment of the acid, and an attempt was made to support the animal by the exhibition of a little beef-tea with a small quantity of brandy; an enema was also given; but in spite of all treatment the dog became gradually worse, and on the next it was evident that he was sinking; the owner then decided to have him destroyed.

On making a *post-mortem* examination, the liver was found to be excessively enlarged, pale in colour, having a granular surface when cut into. The intestines were in a healthy

condition, and no obstruction was detected throughout the whole length of the tube. The lungs and kidneys were normal.

The heart was empty and rather flabby, and the spleen was filled with black blood. No history of the case was obtained possessing any points of interest. The dog was exceedingly fat, as pet dogs commonly are, and appeared to have enjoyed an average good health.

Examination of the morbid parts.—Messrs. Gowing and Son forwarded the liver, heart, and spleen of the dog referred to in the above record, for our inspection. Fatty deposits in the liver of fat animals are very common; but the organ in this instance might almost be said to have undergone fatty metamorphosis, if such a change is possible among pathological conditions. Estimating the bulk of the diseased organ roughly, we should say it was three or four times larger than the healthy gland; so large, indeed, that it must have encroached to a serious extent upon the other abdominal viscera. In texture the organ was granular, yellow in colour, and offered to the edge of the knife the resistance of a mass of lard.

Under the microscope no healthy liver cells were detected, the entire structure was filled with fat globules, which not only occupied the interior of the cells, but existed everywhere in the tissue of the part, large granular exudation cells, of the kind which is often seen in encephaloid growths, were numerous, but no other elements of cancer were observed.

Fatty degeneration affected the fibres of the heart to a remarkable extent; in fact, from the state of the organ, it is certain that the circulation must have been extremely feeble. The spleen was congested, but not otherwise diseased.

SCROFULOUS DISEASE OF THE EYE-BALL AND TRACHEAL LYMPHATIC GLANDS.

By Richard S. Reynolds, M.R.C.V.S., Liverpool.

The subject of this record, a bay cart-mare, was purchased for town work in January, 1868, and was then rising six years old. At that time she was blind of the near eye, which presented the appearance of having been severely injured at some antecedent period. Compared with the opposite perfectly healthy organ the affected eye protruded very slightly

from the orbit; its cornea was a little larger and more convex externally, but not distended (as it became a short time prior to the mare's death), and it was for the most part transparent, but a view into the posterior chambers was almost completely intercepted by large deposits of yellow material. In the area of the enlarged pupillary opening blood-vessels of considerable size could be seen distributed amongst the masses of lymph. No pain was evinced upon ordinary pressure to the globe, nor was there any weeping or abnormal injection of the conjunctiva present.

I learned, from a person who had known the mare all her life, that when between two and three years old she received a severe injury to the eye, but that it had been in the same condition it then was for upwards of two years. The mare was at once put to, and continued at, daily work until Nov. 3rd, when the horsekeeper requested me to examine the eye, which he said "he thought had enlarged during the last two or three days." I found the globe protruding more than a quarter of an inch beyond its natural boundary; its tunics were full and even distended; the conjunctiva was only slightly reddened, little weeping; the blood-vessels, which were previously visible through the cornea, had increased in number and size; no pain was evinced on gentle manipulation. The mare was in excellent robust condition, but dull, and the appetite was not good. The excretions were natural; pulse was forty, and soft; the breathing was normal. During the progress of the case I saw the mare daily. On the 6th the condition of the eye was much the same, but on each side of the trachea, opposite the lower third of the scapulæ, a large indurated tumour, unconnected with the skin, painful on pressure, had appeared, together with some œdematous swellings on the breast, and along the sternum; the pulse had increased in frequency to fifty, the appetite was fastidious, and the urine scanty and high coloured. By the 12th the swellings had increased in size, and appeared to encircle the lower part of the windpipe, and also to extend in smaller quantity along both sides of its course, nearly up to the larynx. The amount of accompanying œdema (never very extensive) varied, perhaps in equivalent ratio to the action of the kidneys, and from the effect of gentle exercise. The eye remained "in statu quo." As the tumours did not by this time show the least inclination to take on suppurative action, although every means had been employed to induce it, I began to fear their nature must be cancerous. The constitutional symptoms had all improved; the pulse was forty, full and strong; the appetite and spirits were good; and the mare

was gaining flesh. The tumours increased in size daily, but remained hard and painful. On the 17th the eye changed for the worse, it protruded more, the tissues were more tense, and had the appearance of containing pus; the cornea became of a reddish white colour, opaque; pus was secreted from the conjunctiva. Still, the mare ate and drank well, and seemed in good spirits; the pulse and respiration were normal, and continued so when I last saw her alive at noon on the 18th. At half-past ten the same evening she drank half a pailful of meal and water, and ate a good feed of corn. At 3.40 in the morning she was found dead in her box. She had evidently died without a struggle, as her sawdust bed was almost undisturbed.

The treatment which I adopted at the commencement was simple. Nutritive, sedative, with repellent lotions to the eye; laxative, followed by tonics and occasional diuretics, as seemed to be required; hot fomentations, poultices, and every means to promote suppurative action in the tumours. I made a careful *post-mortem* examination the same day the animal died. Every internal organ was quite healthy, but large masses of cancerous-looking material were dispersed in lumps in the connective tissue of the neck, from the larynx to the division of the trachea into the bronchii. There would be many pounds' weight of this adventitious material, which was more extensively deposited at the lower part of the trachea which it surrounded, embracing also the œsophagus, blood-vessels and nerves as they passed between the first two ribs, but it did not enter the chest. The brain was perfectly healthy but rather pallid.

The adventitious deposit was semi-cartilaginous in character, containing small cavities, in which there was a white creamy fluid which, I suppose, was not true pus, but softening of portions of the malignant material.

Compared with the other healthy eye the globe of the diseased one was appreciably larger in every diameter, the cornea stretched, and its constituent parts thinned. I did not examine the contents of the eye-ball, preferring to transmit it intact, together with a portion of the deposit taken from the vicinity of the trachea to the Royal Veterinary College for Professor Pritchard's opinion as to whether the disease affecting the eye was of a cancerous nature, and also whether there was a probability of connection between it and the tracheal deposits.

I am indebted to the Assistant-Professor for his kindness, and have the satisfaction to state that he agrees with me in considering that "both depositions were of a scrofulous character, and both intimately associated with—indeed dependent upon—a scrofulous diathesis."

PARTIAL OCCLUSION OF THE TRACHEA IN AN ENTIRE HORSE.

By John D. Overed, M.R.C.V.S., Blofield, Norfolk.

I have this day, December 13th, 1869, forwarded to the Royal Veterinary College, per railway, a portion of the trachea of a horse which died on Saturday last, under what I believe very unusual circumstances. I subjoin a brief history of the case for publication in the *Veterinarian*, thinking that perchance it may interest some of the members of the profession, particularly the junior portion.

The subject of this disease was a valuable entire cart-horse rising six years old, which had frequently been a competitor at agricultural shows. My attention was first called to him on the 16th of August last, when I found him to be suffering from a severe attack of bronchitis, accompanied with hæmoptysis. Under the treatment employed, he gradually improved, and was discharged in about a fortnight from the sick list, not, however, without being still affected with troublesome cough which continued several weeks. Recently he had shown, and especially when put to hard work, symptoms of difficult respiration, accompanied at times with much distress; but this was not much heeded by his owner, as he fed well, and appeared otherwise to be in perfect health. About a month since, however, the case assumed a more serious aspect, and my attendance was again requested. The horse was at this time suffering from extreme dyspnœa of of an intermittent character, the paroxysms sometimes lasting only a few minutes, and recurring again and again after the lapse of some hours. In the intervals he appeared to be in health, his appetite and spirits being remarkably good. At the end of a week these symptoms disappeared, and he again became convalescent. On the 9th, I was again summoned in haste to see him, as he was said to be even worse than before, which I found, on my arrival, to be no exaggerated statement. So urgent indeed were the symptoms, that I dare not exhibit any medicine, but recommended that recourse should at once be had to the operation of tracheotomy. To this proposal the owner—for special reasons—had an insuperable objection, preferring to risk the case rather than have recourse to the operation. The paroxysm lasted about twenty minutes, after which I gave a draught composed of the following—

Æther. Chlor., ℥ss;
Antim. Tart., ʒj;
Ext. Belladon., ʒij;
Ol. Lini., Oss.

and applied an active blister to the throat, and region of the trachea.

The next day my friend Mr. T. Coleman, M.R.C.V.S., saw the animal with me, and concurred in the treatment, but took a more favorable view of the case than myself. He also gave the owner some encouragement to hope for a favorable termination. The paroxysms now occurred at shorter intervals, and were of longer duration, but even at this time when they were over, he breathed tranquilly, ate heartily, and appeared comparatively well. On Saturday evening, December 11th, he was again attacked, and died before I could reach the place. The *post-mortem* examination showed clearly that the case was beyond surgical aid, and that death was the result of asphyxia.

[The specimen sent us consisted mainly of the cervical portion of the trachea, the caliber of which, for about one half of the length of the tube, was greatly diminished by submucous deposit. An examination of the deposit showed that it was composed of well organized lymph, which had doubtless existed for many weeks. The mucous membrane itself was much thickened, but did not present any considerable amount of vascularity. The deposit was fully an inch thick in some parts, but in others not more than a quarter of an inch, from which thickness it diminished at each extremity so as to be ultimately undistinguishable from the mucous membrane. On section it was found that the intercartilaginous tissue was infiltrated with the deposit, and also that the perichondrium was so much congested as to surround each cut end of the cartilages with a purple coloured ring, which contrasted remarkably with their dense white appearance. Otherwise there were no indications of recent congestion. The deposit had taken place upon the anterior part of the trachea, leaving the thin edges of the cartilages in their normal condition.]

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 33.)

We come now to an examination of a series of simply constructed plants, to which the name *Blights* have been given. Bailey describes the word—"Blight, a hurt done to corn or fruit trees, which makes them look as if they were blasted," and it is derived from the German "Blitz, lightning, sudden splendour, glance," upon the supposition that the effects observed in vegetable "blights" are due to some unexplained atmospheric causes.

We now proceed to describe a few of these blights, with especial reference to those affecting some of our corn crops, as such a review can hardly fail to be useful to the student of the effects of vegetable upon animal life.

Some of the simpler forms of blights are classed by the botanist under the genera of Uredo and Puccinia, and to these we would now direct particular attention.

Uredo.—*Sporidia* free, aggregate, covered by the epidermis of living plants, named from *Uro, to burn.*

Puccinia.—*Sporidia,* one or more, supported by a filiform peduncle, named from *Puccini,* a Florentine professor.

Both of these genera are so general that some species may almost be said to be peculiar to every plant, and therefore the second or specific name is usually derived from the higher plant upon which it is found, as thus, *U. betæ, U. primulæ, P. menthæ, P. primulæ,* &c. &c.; and it becomes then a question of great importance whether the specific details are such as, in all cases, to entitle the forms to rank as perfectly distinct species, or whether they may not be varied by the constitutions of the different plants they affect. As regards the Uredo we, however, find that a single family will be effected by different forms—a fact which will at once be seen from the following enumeration of species of Uredo upon cereal crops.

1. *Uredo segetum.*—The smut of wheat, barley, and other grass flowers.
2. „ *caries.*—Bunt or smut of wheat seeds.
3. „ *rubigo.*—Rust of the chaff scales of wheat.
4. „ *linearis.*—Rust of grass leaves.

1. A ramble through almost any field of barley, when this

crop is in flower, will show us that some of the young ears are black, as though they had been immersed in a bag of soot, the appearance being due to the exudation of the dark granules of the smut grains as they exude in masses from the ruptured epidermis of the flowers and their envelopes; and as the whole of these are destroyed by the fungus, the production of grain in the affected ears of corn is rendered impossible. These black ears are more common in the barley crop, but wheat, oats, and even some of our pasture grasses, are not free from it.

Two years since we calculated that we lost at the rate of a sack of barley per acre from this cause, and last year a field of Talavera wheat was estimated to have lost as much as two bushels per acre.

It causes little mischief besides the loss, as a shower of rain washes away most of the smut grains. But sometimes, in a dry season, the epidermis does not fully burst up, and, consequently, the agglomerated masses of smut, kept together by the slightly broken epidermis of the grain, will find their way into the sample, in which case such barley will be totally unfit for the finer ales, and can only be used for commoner high-coloured beer or porter.

Under the microscope, the fungus appears as small, globose, smooth granules, each containing one or more smaller granules or spores, which, with a quarter-inch object-glass, are about the size of the letter o in the type of this article; and these granules are sometimes so numerous, and so easily displaced, that a walk through a corn crop is sufficient to smut one not unlike a sweep. Its smell and taste are innocuous.

2. The *Uredo caries.* — The carious smut or bunt is so called from its highly stinking properties. This especially affects the wheat grains, the testæ of which, instead of being filled with flour, are wholly occupied by a black stinking or fœtid powder, which is resolved under the microscope into rough, warty granules, of a spherical outline, in each of which are from one to three spherical spores. The stinking nature of this fungus renders it a great pest to the farmer, as it imparts not only a bad smell, but a most disagreeable flavour to the sample in which it is found; and so powerful are these qualities that a little of it is sufficient to depreciate the produce. It must, however, be stated that now the evil arising from bunt is by no means so great as formerly, as machines called smutters have been invented, which effectually removes this pest, though, of course, not without a trifling additional outlay.

But the best way to get rid of this fungus is not to grow it; and to prevent this it seems that the most efficient plan is to treat the seed with various strong chemical solutions, hence, a solution of arsenic has been employed as a dressing; lime, alkalies, &c., all have had their advocates; but the most general dressing now used is that of solution of sulphate of copper. We dress our seed with this at the rate of one pound to the sack, dissolved in hot water and mixed well with the seed the night before it is required to be sown. This we have found very efficient in checking smut, but how it acts it would seem to be difficult to determine. It is generally supposed that the chemical destroys the sporules of the fungus, but from a series of experiments we carried out upon this subject some few years since, we are inclined to think that the growth of the fungus is discouraged by killing diseased wheat grains, which it does by penetrating the broken testa and getting to the germen, which will not germinate when treated with corrosive poisons. Where, however, the wheat grains are perfect, these solutions do not penetrate to the embryo. It hence follows that it is highly important to employ as good a sample for seed as can be got, and we have usually found that by so doing dressing for planting is scarcely necessary.

The affection just described should be distinguished from that known as ear-cockle, purples, or cheat, which is not uncommon to wheat.

In this latter the affected grains are purplish black externally, and in the interior of the thickened testa will be found, not a black powder, but a white, cottony-looking substance, which, if moistened with a little water and placed under the microscope, is shown to consist of myriads of worm-like bodies, which, from their length and their flexile movements are not inaptly termed wheat-eels.

This latter is an animal affection, and, probably, is the cause of the appearance of eel-like bodies in decaying paste; but whether or no it be injurious by being taken into the animal system we, as yet, do not know. Of course, like the smut, when it occurs, the wheat grains are destroyed; and in some moist seasons the wheat-eel is so abundant as to cause considerable loss.

3. The *U. rubigo,* or red rust, will be seen in a series of ovate patches, more particularly on the chaff scales of wheat. The patches are of a bright reddish-yellow or orange colour, caused by the exudation of the bright spores of the fungus through the ruptured epidermis.

Wherever these fungi appear in any quantity the corn

grains will be thin and starved, and so, indeed, will they from another affection, which must not be confounded with the present.

Of late years an insect attack has increased in prevalence, which is due to a fly called the *Anthomyia tritici*, American wheat-midge or Hessian fly. This creature lays its eggs in the chaff scales of wheat, which ultimately produce minute, bright orange-coloured larvæ.

Of course, the motions of these insects readily distinguish them from the vegetable attack, at the same time the evil effects of both are much the same; and without further study we are simply beaten by these minute and apparently insignificant creatures.

4. The *U. linearis*, as its name imports, will be found on the plant in smaller linear patches. In this way the leaves of wheat and other grasses, both cereal and pastoral, are often attacked to such an extent that, in walking through them, the brownish-yellow spores of the fungus which inhabit these lines will completely cover one's boots with its yellow dust. This is highly injurious to the yield of the crop, and besides, it aids in the injury of the straw for fodder purposes.

Cold damp springs, want of drainage, and whatever tends to the want of a thorough adaptation of the surrounding circumstances to the wellbeing of the plant, is sure to produce this "rust," so called from its peroxide-of-iron appearance and colour.

Generally stated, we may say that any of these smuts and rusts not only lessen the produce of corn, but act very prejudicially upon the straw likewise. Hence it is always very important that, in selecting straw for chaff, or in employing it as fodder in the straw yard, brightness of colour, and a smooth, unbroken epidermis, should be attended to, for if not our cattle will, as a rule, fare but badly, when they might, from the quantity allowed, be expected to do better.

Again, rusts on grass leaves and smuts to the flowers argues a state of out-of-condition in the meadow that will require most anxious attention—facts which will come out more fully as we examine some allied genera.

Our present history of the Agricultural Uredines will be imperfect if we forget to mention the *U. betæ*, which is sometimes found so abundant on the leaves of the beets and and mangold wurtzels of the farm.

A few cold evenings towards the autumn will cause the leaves of these plants to be dotted over with yellow pustular

patches of the fungus, which is not unlike the two last-described species.

When it occurs in quantity, we may be pretty certain that the root is not going to make any further progress of importance. Hence, then, on the advent of the beet rust, we usually begin at once to pull the crop, as we then find that its keeping qualities are unimpaired, but if left long after the attack, we have no doubt but that the roots most grievously suffer.

In conclusion, it may be stated that nearly all our crop plants are liable to be affected by some species or another of Uredo. Hence, some years ago, we detected an Uredo in the cellular tissues of diseased potatoes, which, growing on the walls of the cells, destroyed them, and lessened the deposit of starch at the same time.

So universal, indeed, are these epiphytical plants, and so varied is their history and modes of attack, that it is difficult to say whether they are the cause or the effect of maladies and injuries to the crop by which they are accompanied, and hence, for the farmer, they should possess a paramount interest; whilst such are the effects of some of these on the food and constitutions of the animals which partake of the plants, that the physiologist of every school should more carefully attend to them.

"CLUB" OR "STUMP FOOT," AND THE SPRING EXTENSION SHOE.

By Isaac Seaman, M.R.C.V.S., S. Walden.

During eighteen years' residence in this town not a year has passed without producing within the area of my practice some half dozen crippled colts, from club or stump foot, for such is the local name of the disease.

The malformation occurs sometimes at birth, but more commonly at the age of two months to two years. The limb from the knee downwards is first noticed getting steep, the action becomes stilty, the toe gradually receding, and the heels are raised. As time goes on, the toe continues to recede, and the heels are lifted higher, the front of the coronet has an appearance of ringbone, and the colt walks on tiptoe.

At the end of two months the tendons and ligaments at the posterior part of the limb become shortened, drawing the

toe backwards, getting the limb so much out of the perpendicular, that the colt has the greatest possible difficulty of moving without falling.

For many years I contented myself with the application of thickened tips to the feet, and when these were unsuccessful I divided the flexor tendons, but when tip shoeing failed I found no good results from tenotomy. This operation appears objectionable in young colts. If the tendons of one leg are divided, the weight of the colt has to be borne by the tendons of the opposite limb; and whilst the divided tendons are uniting, the hitherto well shaped sound leg becomes irremediably unsound. The tendons become elongated, the knee bends backwards, the back of the fetlock comes to the ground, the toe turns upwards, and the animal walks upon its heels; altogether, the limb has a broken-down appearance.

Further, the limb operated upon does not become sound, although the flexors at the knee and between this joint and the fetlock are sufficiently elongated. The ligaments below the fetlock remain obstinately contracted, and the colts continue to have a badly shaped foot. In consequence of the failure of the methods of treatment alluded to, other mechanical appliances were next tried, and after many attempts and as many failures, I at length succeeded in an invention, by the aid of which some of the worst cripples have been restored to soundness, with well shaped feet.

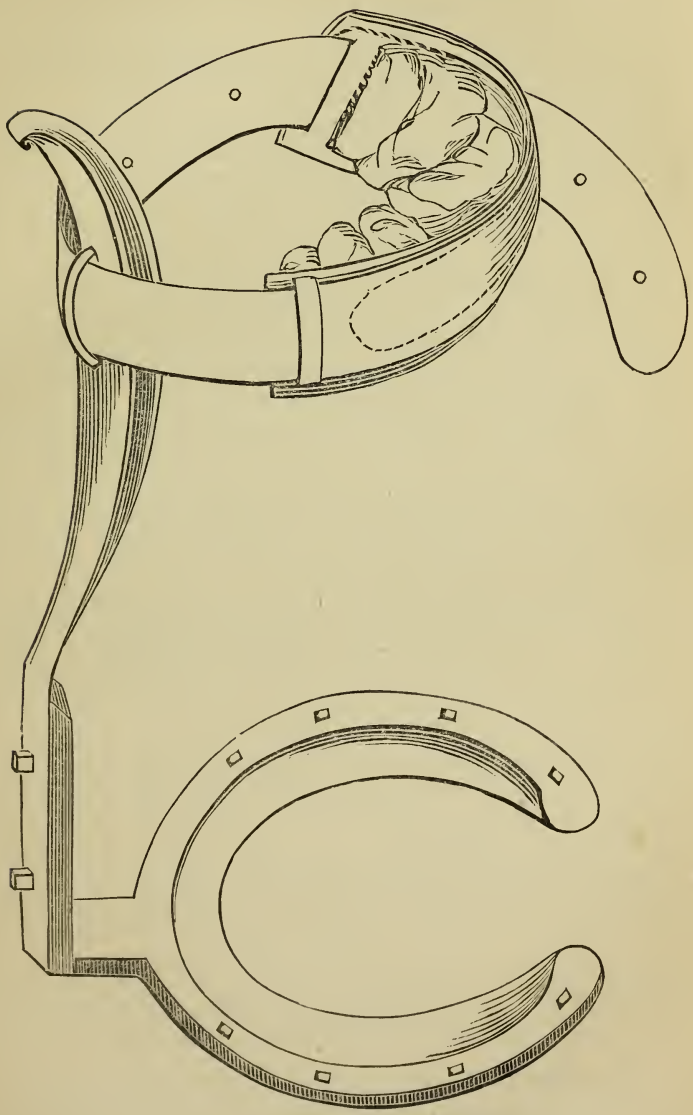
The illustration (see next page) represents the shoe with the spring, and also the padded leg strap attached.

Spring Extension Shoe.

It will be seen by reference to the drawing that the extension shoe consists of an ordinary shoe, with a piece of iron projecting from the toe, and turned up at right angles to the ground surface of the shoe about one inch from the toe. This flat piece of iron is tapped in two places in order to admit the screws which are employed to fasten in the slightly curved spring which is hollowed at the inner surface for the better adaptation to the convex surface of the front of the leg. At the upper part of the spring on the outside is an iron loop, through which is passed the padded leg strap that is used to adjust the spring, as the gradual straightening of the limb renders a closer approximation necessary.

Directions for fixing the Shoes.

1. Obtain services of smith to fix the shoes, provide 4 lb. "CrHs" nails for nailing them on. Remove the spring before beginning to fix the shoe.



2. The crust-bearing surface should be merely levelled, not lowered as in ordinary shoeing; ragged portions of horn at toe must be rasped away and all dirt removed. Colts with stump foot have very little crust except at the heel quarters, and as there is great pressure here upon the nails, it is necessary to preserve abundance of crust.

3. The sole at the toe appears abundant, but the knife must be used only with caution. The shoe is more hollowed at this point to avoid pressure upon the toe. From restiveness or fright some colts require to be cast before the shoes can be nailed on.

4. Nail clenches should be roughly turned, and not rasped as in ordinary shoeing.

5. Next, fix the spring. The limb must then be knee-banded, *or only one screw* must be put in, as the colt may plunge and the spring swing and get broken by the opposite foot. Lastly, apply the strap.

6. No pressure should be put upon the lever spring by the strap until the end of a week, as inflammation may be set up in the different structures in the hollow of the heel, involving even the coronary and coffin joints. The strap may be tightened two holes at the end of a week, and one hole every four days afterwards.

7. At the end of one month remove the shoe, *cut down the heels* consistently with safety in driving the nails, and replace the shoe. Take off the spring before attempting to move the shoe, regulate the pressure upon the lever spring by the strap as during the first month. At the end of second month take off the shoes, cut down the heels of the crust, and the hitherto malformed foot will be restored to its proper shape. I have never found a third application necessary, nor have I ever found the limb return to the contracted and malformed condition.

8. It is necessary to place the colt in a shed or box, without bedding except sufficient in one spot for him to lie down.

GLANDERS IN HORSES, AND THE CONTAGIOUS DISEASES (ANIMALS) ACT.

By Robert P. Bailey, M.R.C.V.S., Lambourne.

I would submit to your judgment whether the action of the Contagious Diseases (Animals) Act of 1869 is not *very defective* as to horses affected with glanders. To come under the provisions of the Act, they must be *offered for sale* or

moved on the high road, or *found on a common or open pasture.* Now, in the division for which I am an inspector a farmer has six horses badly affected with glanders, and that of long standing.

I have reported them to the authorities, and have written for instructions to the Veterinary Department of the Privy Council, who have referred me to the local authority, *i.e.* the magistrates of the division, and they do nothing; nor, indeed, do I see what they are to do under the Act, as the owner has assured me that he never allows them to go off the farm on which they are worked. I think that he is acting "penny wise and pound foolish," as he has to send up provender from his home-farm for them, and rides up there himself, as does his bailiff also; and in hunting numbers pass over the farm, and surely there is a risk of communication of the disease under these circumstances, setting aside the danger to the men and boys employed about the animals themselves.

You will, perhaps, favour us with an opinion on the matter, and oblige.

[The course adopted by the persons alluded to, if not illegal, is highly injudicious. Is it quite certain that the diseased animals are never moved on a public road or by the side of a highway? Was notice of the existence of the disease given by the owner? We should imagine that the owner of the horses would be held responsible for any injurious consequences which may result.—Eds.]

ABSCESSES IN THE THROATS OF CATTLE.

By Thomas Cunliffe, M.R.C.V.S., Church, Accrington.

On perusing the pages of the *Veterinarian* for the last month I find two cases of abscess in the throat of horned cattle recorded by a Mr. C. Grey, veterinary student, and as I have had similar cases in my practice in which I have been successful, I thought that perhaps it would not be considered presumptuous if I sent you a few lines on the subject.

In so far as regards the abscess in these cases pointing externally I have found that it does not do so, but that as it progresses it will point anteriorly, or in a direction towards the mouth.

I have often felt an abscess in its early stage by introducing the hand to the back of the mouth, and as the abscess

advanees in formation it will point so directly in front that its fluetuation ean be easily deteeted under the fingers.

When the abscess is suffieiently matured a little compression will easily burst its walls and allow the contents to eseape by the mouth.

The treatment I generally adopt in these cases is simple. A laxative is administered, and the mouth gargled with a solution of Pot. nitras. mixed with equal parts of vinegar and water, twiee or three times a day. I also usually apply a stimulating lotion to the throat.

After the abseess has discharged its eontents, I use a gargle, composed of a weak solution of Sulph. aluminis, for a few days, and administer tonies with diuretics as the case may require.

I have had several cases of this kind, and I have found the treatment very suceessful. The diet, of course, should be nutritious in order to keep the strength of the animal up as much as possible; but swallowing towards the end of the case is very diffieult. Indeed, in one case which I had under treatment, the cow eould neither swallow solid food nor fluids for three days. She, however, recovered.

Pathological Contributions.

CATTLE PLAGUE.

Up to the present time no further information has reached us relative to the introduction of cattle plague into Silesia, to which attention was ealled in our last month's issue. The absence of intelligenee should, we think, lead to the conclusion that the rigorous means adopted by the Prussian government have led, in this instance, to the extermination of the disease, and probably to the saving of Central Europe from another serious loss of eattle.

The plague, however, is still very rife in Poland, and in many parts of Galieia, Buckowina, Transylvania, and Hungary. Roumania and other divisions of Turkey are also suffering severely, and very recently his Majesty the King of the Hellenes published a decree forbidding the entrance into Greeee of cattle, hides, horns, bones, intestines, fat (melted or raw), hair, and bristles, from Thessaly.

According to the latest information no diminution of the plague had taken place in the infected districts of Asia Minor.

FOOT AND MOUTH DISEASE.

Since our last month's publication the attacks of foot and mouth disease have, with some few exceptions, greatly diminished in every county in England, the most notable exception being Cheshire. The number of cases of this disease, and also of pleuro-pneumonia, which have occurred in that county from the beginning of September down to the present time, make it highly probable that Cheshire will head the list in the losses from these diseases, as she did in those from cattle plague. It is not difficult to explain the reason of this; nay, rather, it would be surprising if it were otherwise, seeing the extraordinary way infectious diseases are there dealt with.

The decline of the disease on the Continent is also fully established. Indeed, many countries are reported as altogether free of cases. France, Belgium, and Holland, are, however, still infected, as are several of the German states. The disease is said to have disappeared from the districts near to the Dardanelles, but to have broken out afresh near to the Port of Salonica, in Roumalia. Its existence is also reported in the Provinces of Vicenza and Padua.

PLEURO-PNEUMONIA.

No material alteration seems to have taken place during the past month in the numbers of places in which pleuro-pneumonia exists. This disease is quite as widely spread, both in Great Britain and Ireland: and we cannot congratulate ourselves on more energy being displayed, in some of the infected districts, by the local authority in rightly enforcing the provisions of the law. Experiments of inoculation have at present led to no definite conclusions, nor would it appear that they are likely to do so. In another part of the Journal we insert the report in full of the experiments undertaken in Norfolk. It is unnecessary that comment should now be made upon this official document.

SCAB IN SHEEP.

The Contagious Diseases (Animals) Act is gradually revealing the serious extent to which this disease exists among the sheep in Great Britain, and the losses which are necessarily sustained in the diminished quantity, as well as deteriorated quality of home-grown wool. The centres of affection are returned as nearly 300, and the number of counties in which scabs exists is thirty-eight. This shows a large increase upon last month's returns; but it cannot be said to represent the full extent of the disease, as numerous cases are known to be withheld from the inspectors by the owners of the animals. Scab is equally as rife on the Continent as it has been for some time past. In Roumania the disease appears to be on the increase, particularly in the neighbourhood of Stettin, where, as our readers know, it has prevailed for many months.

VENOUS CONGESTIONS IN LAMBING-EWES.

From the information which has reached us from different parts of the country, the south-western counties in particular, it would appear that the long continued wet and stormy weather, combined with the high range of temperature which has mostly prevailed during the past two or three months, is producing serious losses among the lambing-ewes. Many lambs are born dead, and in several of these cases, as also in others, the ewes have died shortly after parturition from venous congestion, chiefly of the uterus or brain, less frequently of the liver or lungs. Instances of ewes being attacked and sinking from the malady a few days before lambing are not unfrequent. Post-mortem examinations have shown that the congestion depends on a vitiated state of the blood, which would seem, among other changes which it has undergone, to be deficient in saline and albuminous matters. In the year 1852-3, when the weather during the autumn and winter was even more injurious to health of ewes, the losses from this disease were enormous. At that time the subject was taken up by the Royal Agricultural Society, and an animated discussion took place at one of the meetings of the Council. It was held by the Veterinary profession that treatment after the setting in of the symptoms was not likely to be successful, and that reliance could only

be placed on preventive measures for arresting the disease. Restriction of the quantity of green food and the free use of cake, and corn, and hay chaff, and the exhibition daily of a little salt were strongly advocated.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the number of foreign animals brought by sea to ports in Great Britain, which on inspection on landing, within the month of December, 1869, have been found to be affected with any contagious or infectious disease, specifying the disease, and the ports from which, and to which, such animals were brought, and the mode in which such animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Antwerp...	London ...	Foot-and-Mouth.	1	...	...	30	31	31
,, ...	Harwich...	,,	...	2	...	...	2	2
Boulogne .	London ...	,,	38	...	...	...	38	38
Dunkirk .	London ...	,,	22	...	...	32	54	54
Hamburg .	London ...	,,	31	...	...	...	31	31
,, ...	Hartlepool	,,	4	1	...	...	5	5
,, ...	Newcastle-upon-Tyne	,,	22	2	...	...	24	24
Harlingen .	London ...	,,	...	31	...	...	31	31
Rotterdam	London . .	,,	...	8	...	19	27	27
	Total ...		118	44	...	81	243	243

"ALEXANDER WILLIAMS,

" Privy Council Office, Secretary.

" Veterinary Department, 13th January, 1870."

Facts and Observations.

Rabies in a Cow.—A few days ago, a cow belonging to Mr. William Shackleton, farmer, Alcomden, near Hebden Bridge, appeared to be suffering from some strange disorder. A veterinary surgeon was called in to examine the animal, and pronounced it to be a case of hydrophobia. Previous to its death the animal became very violent, and showed all the usual signs of this disease. Some time ago a strange dog was prowling about the farmstead, and bit the farmer's dog, but it was immediately destroyed. It is thought the cow was bitten at that time. During the past few months many cases of this kind have occurred in the same neighbourhood. Dogs, pigs, cats, cows, horses, have been attacked, destroyed, or died from the effects of hydrophobia. Several human beings have been bitten, and last week a man died from the effects.—*Standard.*

The Relation as to Area between the Tendon and the Muscle.—Professor the Rev. Samuel Haughton has lately published some interesting observations on this subject, and especially in regard to the supposed ratio between the cross section of the muscle and its tendon. He concludes that the cross section of a muscle does not bear a constant ratio to the cross section of its tendon, unless the friction experienced by the muscle and tendon be also constant, and that there may even be a *surplusage* of strength in the tendon beyond what is absolutely necessary to resist the combined force of the muscle and friction. This surplusage, however, cannot be supposed to be large, if the principle of *economy of material* in nature be admitted.—*Popular Science Review.*

Cinchona.—The culture of the cinchona, or Peruvian bark, in St. Helena, is progressing satisfactorily. The plants are all in excellent health, and have a fine green, vigorous appearance. There are now about 4000 planted out, and it is thought a sufficient number can be obtained from them to stock the whole colony.—*Journal of the Society of Arts.*

Experiments in Tinea Favosa.—At a late meeting of the French Academy, M. de St. Cyr sent in a memoir detailing his experiments in the extension of this parasitic affection. He made some of his experiments on dogs, and he has since found that all the mice in the same

locality are infected. Hence he concludes that the disease may be communicated to man from animals.—*Popular Science Review.*

Wool.—The importation of colonial wool into London for the year ending December 31st, 1869, was as follows:

	1869.
New South Wales and Queensland	120,544 bales.
Victoria	206,188 ,,
South Australia	66,097 ,,
Western Australia	4,861 ,,
Tasmania	17,362 ,,
New Zealand	85,329 ,,
Cape of Good Hope	134,163 ,,
Total	634,544 bales.

From India, the importation was 57,524 bales, against 53,353 bales in 1868.—*Journal of the Society of Arts.*

Nitrous Oxide Gas as an Anæsthetic.—The *British Medical Journal* has ascertained that the use of nitrous oxide gas as an anæsthetic continues steadily to increase over the country, and that the amount made by manufacturers in London cannot be much under 60,000 gallons per annum, representing on the rough the production of anæsthesia in about 15,000 individuals. This increase arises almost entirely from its popularity among dentists. The gas has received comparatively little encouragement from surgeons. This may be easily explained by the great expense of the gas in even slightly prolonged operations, and the cumbrous nature of the apparatus required for its use. Its undoubted safety and rapidity of action, as compared with chloroform and other ethers, and the minimum of annoyance resulting from its after-effects, have been duly appreciated and practically recognised by dentists.—*Ibid.*

The Manufacture of Iron.—It is estimated that in England 500 blast furnaces are reducing, by their intense heat, nearly 12,000,000 tons of iron ore to 4,800,000 tons of metallic iron, which, at its place of production, has a value of about £11,000,000 sterling. Those blast furnaces consume more than 14,000,000 tons of coal; and, to convert the pig-iron obtained into bars, rails, &c., a like quantity of coal is required. In France the great iron industry is no less active. The works of Messrs. Schneider and Co., at Le Creusot, the largest in France, have fifty acres under cover. Here are fifteen blast furnaces, with twenty-seven steam-engines blowing air for them, and forging iron besides. At the mines and works over 3500 men are employed. In

Belgium, at the works of the Company Cockerill, near Liege, 7400 workpeople are employed.—*Ibid.*

Eggs.—England is said to receive annually from Ireland one hundred and fifty millions of eggs, and from France over one hundred and thirty millions. The great object is to get fresh ones, and many modes are resorted to to ascertain this important point. Some dealers place them in water, when, if fresh, they will lie on their sides; if bad, they stand on one end. In many countries the eggs of lizards are eaten. In the West Indies the eggs of the guana are thought a delicacy, and in the Antilles the eggs of the alligator, which are said to taste very much like hens' eggs, which they also resemble in shape. Turtles' eggs are held in great esteem wherever they are found, as well by Europeans as others; they have a very soft shell, and are about the size of a pigeon's egg. The mother turtles lay thrice a year, at intervals of two or three weeks, depositing in one night as many as a hundred at a laying. An experienced eye and hand are required to detect the eggs, as they are always ingeniously covered up with sand; but when they are hunted very few escape. The Orinoco Indians obtain from these eggs a kind of clear, sweet oil, which they use instead of butter. In the month of February, when the high waters of the Orinoco have receded, millions of turtles come on shore to deposit their eggs. The certainty and abundance of the harvest is such that it is estimated by the acre. The yearly gathering about the mouth of the river alone is about five thousand jars of oil, and it takes five thousand eggs to make a jar.—*Ibid.*

Quantity of Copper produced in the Year 1866 over the Whole World.—The *Chemical News*, quoting from a recent paper by M. Petitgand, states that the quantity of this metal raised on the entire globe in the year alluded to—the latest period that statistical records of this kind have been reliably brought together—amounts to 93,415 tons, which is nearly double the quantity raised in 1846. From the statements made by this author there appears to be an increasing tendency to a lower cost price of this metal. Large and valuable deposits of excellent copper ore known to exist, especially in Polynesia, are as yet untouched.—*Popular Science Review.*

THE VETERINARIAN, FEBRUARY 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

THE INTENDED PRACTICAL EXAMINATION OF VETERINARY STUDENTS.

If much deliberation affords any guarantee of the wisdom of a new measure, the resolution which was adopted by the Council of the Royal College of Veterinary Surgeons, at their last quarterly meeting, deserves to be deemed a wise one. More than a year ago, a proposition embodying the idea of the necessity for a practical examination of the candidate for the diploma, was submitted to the Council, and withdrawn, in compliance with an expressed desire on the part of some of the members, that time should be allowed for the consideration of a complete scheme of examination. Since then, changes more or less elaborate in character have been suggested, discussed, referred to committees, reported upon, referred back, and shelved ; and now, at last, we have succeeded in achieving a very important and most necessary reform, of the value of which there never arose a single doubt, and concerning the practicability of which, no difference of opinion has ever been expressed, and which might easily have been carried into effect two years ago. In place of a complete change of the system of examinations, requiring a new arrangement of subjects, and even an extension of the curriculum for its full development, we are to have established an additional test of the student's qualifications—a test which can be applied without disturbing existing regulations, and which will not, even by its instant application, press unfairly on the candidate for admission to the body corporate.

It will be seen by reference to the report of Council proceedings, that the idea of extending the examinations to other subjects than those which are at present taught in the College is not abandoned ; but, pending the completion of an efficient scheme, which shall meet the views of the profession, and at the same time, accord with the method of

education adopted at the colleges, the Council has decided that in future, no candidate shall receive a license to practise the veterinary art, unless he shows to the satisfaction of the examiners that he is familiar with those everyday duties which, in the course of his practice, will inevitably fall to his share, and in the due performance of which his reputation for skill and practical tact will in a great measure depend.

Candidates who intend to present themselves for examination at the termination of the present session, will not, perhaps, be required to submit themselves to this practical test, in addition to the usual *viva voce* examination; nevertheless, without pretending to say what scheme the examination committee may recommend, we feel tolerably certain that we shall be doing good service to the student, by giving an outline of the method which may be adopted in carrying out the proposed test. Time, place, and duration of the examination are matters of detail to which we shall presently refer. The candidate will, we presume, be taken to his patients—horse, ox, sheep, pig, or dog, any or all of them, as the case may be—and will be required to prove to the examiners that he understands how to proceed in the examination of the animals for the purpose of ascertaining the nature of the malady, local or general, from which they may be suffering. For example, the student may be asked to take the number of the pulse, look at the teeth, examine the eyes, indicate by the finger the precise spot to be selected in trephining the frontal or maxillary sinuses; he may also be expected to discover if splints, spavins, or ossified cartilages exist; to go through the routine of testing a horse's paces, for the purpose of detecting lameness, and deciding in which leg the defect is apparent; he may be expected to approach a horse in the stall or box, in a proper manner; take up the animal's feet, without alarming him, or getting himself into trouble; and the examiner may require him to take an ox by the nose, and inspect his mouth; or go through the performance of turning a sheep, a feat that requires more tact than physical force. There is a right and a wrong method in all kinds of work, and in missing the right way, the unpractical student inflicts wrong

upon himself, even more than upon his patients and the public. The awkwardness which will certainly distinguish his first attempts to play his part in the stable or cowshed, may damage him seriously in the opinion of his employer, and probably close to him for the moment the opportunity of exercising the scientific knowledge which he possesses. Truly, it is not much to demand that a candidate for the license to practice the healing art on the bodies of all domesticated animals, shall know how to handle them firmly and gently, and be able, at least, to search intelligently for the signs of disease. The possession of this small amount of practical qualification may not be deserving of much praise, but unlimited censure must be awarded to him who has it not. It is well worth while, therefore, for the pupil to remember that in the extremely elementary character of the practical examination, lies its real danger. There is a possibility that working men (of idlers we take no account), may deem such small matters as those to which we have just referred, quite beneath their notice, or, at least, unworthy of serious attention, and the natural result will be that, in the presence of the examiners, they will fail to satisfy them, by their manner of performing the simple duties required of them, that they are fit and capable persons to practise the art and science of veterinary surgery. No extent of theoretical knowledge can serve the student in passing through this ordeal; if he fails, his failure is for the moment hopeless; but he need not, indeed, should not, fail; nothing will be required of him which he may not learn by observation and practice during his pupilage at one of the colleges; he may know how to approach a horse or a cow, by watching an experienced groom or cowman; by attention during the clinical rounds he will acquire knowledge of the method of examining diseased animals; and in the infirmary practice, he will learn the duties of a dresser.

All important changes, however ultimately useful, or even immediately necessary they may be, entail considerable inconvenience upon those who are not prepared for innovations, and often excite much opposition from others, who are always satisfied "to rest and be thankful;" but, in the present instance, we cannot see the smallest sign of a

grievance; the Council of the College only asks that candidates for the diploma shall show that they possess those qualifications which have hitherto been placed to their credit without question. To those students who have had opportunities of practice before their entrance to the colleges, the examination will be as "a thrice-told tale;" those who have neglected to initiate themselves into the handiwork of their profession, must set themselves rightly and strongly to learn their duty, "knowing that for failure there is no consolation."

On the subject of the time, place, and duration of the examination, we have little to say; the thing being essentially a good and necessary thing, must be carried out in the most effective manner attainable, with the present available machinery. The work will be much facilitated if the Colleges co-operate with the Council, and a still greater benefit would be gained from their assistance if our veterinary museums contained models and preparations similar to those which are to be found in the Continental schools.

The duration of the practical examination is an important part of the scheme; as far as we can see, the candidates must be examined singly, otherwise the work done by one student will inevitably be imitated by the others. Fifty or sixty candidates, each one requiring a period of not less than an hour to be devoted to him, will occupy five or six days, according to the number of examiners and the division of subjects. If four examiners were engaged in different parts of—say, for instance—the Royal Veterinary College infirmary, they might fairly test twenty candidates in one day in reference to the horse, and by adopting the same system another day in a dairy, or the lairs attached to a cattle market might complete the examination.

There are difficulties to overcome, doubtless, and the committee in drawing up a scheme for the approval of the Council will have to take a variety of conditions into account. One thing is clear, the Council is pledged to the establishment of a test of the practical knowledge of candidates for the diploma, and whatever may be the extent of the difficulties which may affect the carrying out of the idea, they are bound to meet them with an honest

determination not to swerve from their intentions, sure of the support of the profession.

PRELIMINARY EXAMINATION AND THE EDINBURGH VETERINARY COLLEGE.

We are informed that, subsequently to the meeting of the Council of the Royal College of Veterinary Surgeons, a communication was received by the President from Mr. Macgregor, agent to the trustees of the Edinburgh Veterinary College, to the effect "that the Committee of Trustees held a meeting on the 13th inst. (January), at which they had considered and approved generally the representations of the deputation from the Royal College of Veterinary Surgeons; and that, after the heads of the Edinburgh College had adjusted the precise mode of the preliminary examination, the trustees would be glad to be afforded the opportunity of finally approving the scheme."

Extracts from British and Foreign Journals.

PRESERVATION OF MEAT.

Public attention within the last few years has been frequently called to one or other of the patented processes for the preservation of meat, and as none of these have come up to the expectation formed, considerable doubts are now entertained when any of these methods shall be announced a success. Among the processes of which much was expected about four years ago was one patented by Professor John Gamgee. The experiments he undertook about two years ago in the United States did not prove successful. The samples of preserved meat submitted for the approval of the "Food Committee" of the London Society of Arts were apparently not such as in their opinion would warrant the Society to publicly announce that the desirable problem had been solved.

From a statement which appeared in the *Times* newspaper of Friday last, it is to be inferred that the experiments which have been conducted in London by Professor Gamgee have

proved eminently successful. If, upon further testing the preserved meat, such as by shipping samples to Australia, and these being found upon arrival to be free of any taint in smell or taste, the problem may be regarded as successfully solved. One of the results which would undoubtedly follow, would be a rise in the price of cattle and sheep in the Australian colonies, and perhaps in the States of South America. Ultimately a lowering of the prices of cattle and sheep in the United Kingdom would necessarily follow. The Board of Trade Returns, for the eleven months ended November 30, 1869, compared with the corresponding period of 1868, show how dependent the inhabitants of this country are upon the imports of foreign stock, and that they are becoming yearly more so. This will be best illustrated from the subjoined table:—

	No. 1868.	No. 1869.
Animals, Living—		
Oxen, Bulls, and Cows	110,429	182,482
Calves	21,116	27,978
Sheep and Lambs	323,955	677,987
Swine and Hogs	31,760	61,841
Meat, fresh or slightly salted—		
Beef	4,080	10,466
Pork	3,756	15,920
Meat salt—		
Bacon and Hams	533,369	668,175
Beef	203,870	189,063
Pork	113,113	137,252
Meat, not otherwise described	42,291	57,178

Whatever may be the immediate or prospective results of Professor Gamgee's endeavours to perfect his process for the preserving of fresh meat for a considerable length of time, and thereby rendering its transport easy from one country to a distant country, he is well entitled to praise for his persevering exertions. That the problem will be solved by some one admits, we think, of no doubt whatever, and most probably the solution will be arrived at within a few years, in the event of Professor Gamgee's process not proving thoroughly successful.

INOCULATION FOR PLEURO-PNEUMONIA.

At the meeting of the Council of the Chamber of Agriculture, on Saturday, Mr. Smith presented the following report:—

To the Council of the Norfolk Chamber of Agriculture.

First report of the experiments of the inoculation of cattle for pleuro-pneumonia in Norfolk, commenced in November, 1869, by William Smith, M.R.C.V.S., Norwich.

Having been requested to report to you the progress made in the inoculation of cattle for pleuro-pneumonia which I have been conducting, the following detailed statements and observations are respectfully submitted for your consideration.

It is desirable to observe that as these experiments were all made on infected farms—indeed, in infected herds—they are open to objection, as at the time of operating, some of the animals, probably all that have taken it since the operation, may have been incubating the disease in the system, but this was an evil that could not, under existing circumstances, be avoided; agriculturists are not proverbial for readily adopting anything novel, and perhaps they are right; difficulty was found in obtaining the owner's consent to have the operation performed, even in infected herds, whilst in healthy ones, in no instance has the proposal to inoculate them met with success, although they were assured that it was highly improbable and next to impossible that by this means pleuro-pneumonia would be introduced into their herds; but who can be surprised at this? Individual exertion must be aided by a responsible body, and supplemented with means, if it be desired to thoroughly test the value of inoculation as a preventive of pleuro-pneumonia, and it must be done on a scale sufficiently comprehensive to enable us to form sound, practical, and definite opinions; half doing things in medical as well as in most other matters, leads only to confusion and error.

The subjoined details of the experiments follow each other in the order in which they were conducted, and were made with fresh lymph, selected from the lungs of animals suffering from a mild type of pleuro-pneumonia, in which only one lung was involved.

Experiment No. 1.—On November 11th were inoculated in the tail, about three inches from the tip, eight Irish steers, at Griston, age 1 year, condition poor, unhealthy looking, registering a very high internal heat; in one the thermometer stood at 104°, and in others the reading was above 103°, as will be seen by reference to the table below. No local swelling or redness worth noticing followed the operation, or observable constitutional disturbance.

Register of internal heat of body at the time of operating,

as indicated by Cassella's self-registering clinical thermometer.

Steer No. 1	. . .	102°4-5	The normal heat in the ox being 102, those steers marked with an asterisk in the tables, were considered suspicious.
„ 2	. . .	*103 3-5	
„ 3	. . .	102 3-5	
„ 4	. . .	*103 1-5	
„ 5	. . .	102 4-5	
„ 6	. . .	103 2-5	
„ 7	. . .	104	
„ 8	. . .	*103 2-5	

On November 19th, the owner, writing to inform me how his bullocks are, says—"I do not see any of them fall off in any way from the inoculation. On Wednesday (five days after the operation) I saw some fluid issuing from the spot where the inoculation was performed."

Experiment No. 2.—On November 17th, one bull at Thorpe St. Andrew, from an infected herd, was operated on, his two companions having died from pleuro-pneumonia, age nine months, condition fair. Result to this date—unaffected, either locally or otherwise.

Experiment No. 3.—On November 23rd were inoculated eleven Irish steers from an infected herd at Beighton, age two to three years, condition fresh. No local specific action was set up in the tail. Result—three attacked, two of which were killed and one recovered.

Experiment No. 4.—On November 29th, ten steers from an infected herd at Bradfield, age three years, stall fed, condition forward. No heat or tenderness of the inoculated part of the tail or any observable effect followed. Result up to this time—all well.

Experiment No. 5.—On December 6th, nine steers from an infected herd, at Basham were operated on, age three years, condition forward. No local or other observable action ensued. Result—none attacked.

Experiment No. 6.—On December 7th, eighteen steers and stags, one and two years old, some fresh in condition and others poor, Irish bred. Result—before the end of the month three were attacked and six since, one badly diseased and died, four others were killed or died, and two recovered. These were part of an infected herd at Booton, to which further reference will be made.

Experiment No. 7.—On December 8th, twenty steers from an infected herd at Freethorpe, age two to three years; condition fresh. Result up to January 14th—all well. In this as in the experiments which follow, no local or constitutional disturbance or sign of illness occurred after the operation, and it will not be necessary to repeat the observation.

Experiment No. 8.—On December 23rd, three Irish steers from an infected herd at Blofield, age one year and a half, condition fair. Result up to this date—healthy.

Experiment No. 9.—On December 30th, eight home-breds inoculated, of various sex and age, condition fair, from an infected herd at Brundall. Result up to Jan. 14th—none attacked.

Register of internal heat on December 30th, at the time of operating, and on January 2nd and January 6th, 1870.

No.	Breed.	Sex.	Age.	Condition.	Dec. 30.	Jan. 2.	Jan. 6.
1	Home	Heifer	3 to 4 yrs.	Fresh	101°4-5	101°4-5	102°2-5
2	,,	,,	,,	,,	102 1-5	102 1-5	102 1-5
3	,,	,,	,,	,,	*103 3-5	103	103 1-5
4	,,	,,	6 months	,,	*103 4-5	103 4-5	102 4-5
5	,,	Steer	,,	,,	103 2-5	102 4-5	103 2-5
6	,,	,,	,,	,,	103 2-5	102 4-5	102 4-5
7	,,	Heifer	3 to 4 yrs.	,,	101 2-5	102 4-5	102 1-5
8	,,	,,	,,	,,	102 2-5	102 2-5	102 1-5

Summary.—Inoculated,87; attacked with pleuro-pneumonia, 12; died and slaughtered, 9; recovered, wholly or partially, 3; remaining at present healthy, 75.

Thus we see that only 12 animals out of the 87 inoculated were attacked with pleuro-pneumonia, and these, I confidently believe, took the disease in a natural way, for these reasons, that they were not at all affected locally by the operation; and that inoculation for other contagious diseases in animals, such as small-pox in sheep, rinderpest and foot and mouth disease in oxen, communicates the specific malady to nine tenths or more of those operated upon in a form either mild or more or less virulent.

Having already stated that these experiments were all made in infected herds, it is worthy of note that those subjected to the experiments numbered 6 and 9 had lost several animals from pleuro-pneumonia prior to the inoculation—in fact, the disease had been amongst them for some weeks; *and in No.* 6 *four animals had died from parasitic disease of lungs as well as some from pleuro-pneumonia.*

Now, as allusion has been made to the latter herd, at the Central Committee and in the local papers, in which Mr. Parmeter's as well as my name has been introduced in connection with these experiments, I think it only an act of justice to those at whose request I acted, to the public who—unless an explanation is offered—cannot fail to be confused and perhaps alarmed at the statements made, to

the interests of medical science and in self-defence that the bare truth, stripped of the prejudice and ignorance with which it has been invested, should be told, especially since the appearance of an article in one of the local papers, lamenting that a veterinarian should be allowed to go about propagating a disease which is on the decline, by inoculation, and so it would be if it were true; but pleuro-pneumonia is unfortunately on the increase in this country; and this disorder and foot and mouth disease have been so unmercifully jumbled together that the public may well believe that both these diseases have been, and are, in the course of propagation by the veterinarian referred to. It is admitted that foot and mouth disease is on the decline; but it is denied that it has ever been given by a biped to quaduped in this country by design, although he may happen to be an unfortunate veterinarian requested to investigate the nature and probable preventive effects of inoculation for the public weal. Moreover, I venture to challenge to the proof the physicians and veterinary surgeons of Germany and Belgium, including the originator of the practice, Dr. Willems (in 1851); and its advocates, if now alive, Didot, Corvoni, Ercolani, and others, as well as those who have practised it in our own country, *that they have ever produced pleuro-pneumonia by inoculation at all, or at least in a degree sufficient for a careful observer to detect it, much less in such a form as to jeopardise or destroy life.* And, moreover, I am willing to undertake, in proof of my *bonâ-fides*, to inoculate any number of healthy animals that have been on farms for six months, where pleuro-pneumonia has not occurred for four years, and to get the same insured in the Norfolk Farmers' Insurance and Investment Company, whose chief offices are in St. Giles's Street, Norwich, against any losses that may occur from pleuro-pneumonia after the operation, upon the same terms as now charged for cattle insurance against ordinary disease and accident.

After these remarks it will be apparent that I do not attach much importance to the results of these experiments. They are, in my opinion, insufficient and incomplete. I think, however, they incontestibly demonstrate two facts; first, that pleuro-pneumonia inoculation, when scientifically performed, is a harmless operation, and not likely to cause an extension of the disease, and that the loss of animals' tails and other untoward effects, when they occur, are produced by the ignorance and want of skill of the inoculator; secondly, that it differs in most essential points from the conditions induced by inoculations in other contagious diseases, such as small-pox or cattle plague. In the inocu-

lation for pleuro-pneumonia we have a total absence of the manifestations apparent in other inoculations; there are no local signs of its having taken, nor constitutional or febrile disturbance that can be detected, even though we call in the aid of that delicate instrument, the clinical thermometer, as proved by its readings in experiment No. 9, the particulars of which are in a tabulated form under it.

As no opportunity has occurred of examining the lungs after death of inoculated animals under circumstances favorable for the forming of a truthful opinion as to their condition *it may yet be discovered that some morbid lesions, serous exudation, so characteristic of pleuro-pneumonia, or traces of such, may exist as a consequence of inoculation,* and in order to put this to the test, as well as the whole question of the prophylactic influence of the operation, I venture to suggest the following series of experiments:

Proposed Experiment No. 1.—That twelve young animals, bred on a farm where pleuro-pneumonia has not existed for four years, should be purchased, and inoculated, and that four should be slaughtered six weeks, four twelve weeks, and four sixteen weeks after the operation, for the purpose of examining minutely the cavity of the chest, pleuræ, and lungs.

Proposed Experiment No. 2.—That 100 young oxen, bred under the same conditions as in proposition No. 1, should be purchased, and that 50 of them should be inoculated on the farm; and that ten of the inoculated, and ten of the uninoculated, should be sent into five infected herds, and kept on the premises, where practicable, for a period of from six to twelve months.

Proposal No. 3.—As it is a well-known fact that certain farms in this country have never, for the last fourteen or sixteen years, been without one or more cases of pleuro-pneumonia occurring annually amongst the herds, that the proprietors of such farms shall be induced to have all fresh animals introduced upon them for the next four years inoculated.

Before concluding this report, I beg to thank Mr. J. D. Overed, M.R.C.V.S., of Blofield, for the ready and valuable assistance he has rendered in the prosecution of the foregoing experiments.

To Professor Gamgee, of London, thanks are especially due for the kind presentation of two clinical thermometers of very delicate construction, which he had regulated at Greenwich, before sending them for the purpose of those experiments.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF THE COUNCIL, HELD JAN. 5TH, 1870.

PRESENT:—The President, Professors Gamgee and Brown; Messrs. Broad, J. C. Broad, Cartwright, Ernes, Field, Fleming, Harpley, Hunt, Moon, Morgan, Robinson, Wilkinson, Withers, and the Secretary.

The President in the chair.

The minutes of the preceding meeting were read and confirmed.

Professor Brown said, in reference to a statement in the minutes, that the Secretary, in answer to certain queries, had written that particular persons' names were not on the Register, and that, therefore, the persons were not members of the College, said he thought it was quite sufficient to say the name was not on the Register.

Letters were read from Professor Williams, of the Edinburgh Veterinary College, regretting that he was unable to attend the meeting; also one from Mr. Gowing, who was indisposed.

A letter was read from Messrs. Sheppard and Riley, of Moorgate Street, written at the request of Mrs. Goodwin, thanking the Council of the Royal College of Veterinary Surgeons for their kind sympathy expressed in the letter of condolence of October 7th, and regretting her inability to do so herself on account of continued ill health.

Letters were read to the following effect, together with the replies:—

A letter from Mr. Graham Mitchell, of Calcutta, who holds the Highland and Agricultural Society's Certificate, dated 1854, asking to be informed of the conditions on which he and other candidates residing abroad could obtain the diploma of the College. He had been informed, in reply, that he would be allowed a written examination on conforming to the rules laid down by the Veterinary Committee of the Court of Examiners. The other candidates referred to in his letter would be required to make a similar and distinct application, stating the dates of their certificates.

Mr. Wilkinson wished to know whether the questions put to Mr. Mitchell would be the same as those put orally to candidates in England.

The Secretary replied that he had merely answered the letter; he had not sent the questions.

A letter was read from Mr. Wm. Chambers, of Docking, Lynn, asking whether he could legally be charged for armorial bearings because he had used the crest of the College.

He was informed that on referring to the schedule of Assessed Taxes it is therein stated—"That any person using paper for letters or envelopes impressed with a crest or any armorial ensign is liable to the duty."

A long letter from Mr. Robt. Ward, M.R.C.V.S., of Winchester, was read, in which he refers to a former correspondence addressed to the Secretary on the subject of James White, of Wickham, styling himself a member of the College, and enclosing a letter which he had received from that person, desiring that it should be laid before the Council of the Royal College of Veterinary Surgeons.

Mr. Ward was informed that the only person of the name of James White entitled to call himself a member of the Royal College of Veterinary Surgeons was residing in Berwickshire, and that his diploma bears date April 16th, 1835; also that the Council had already decided that the only course to be adopted in the above case was to give publicity to the fact. A copy of the new Register was also forwarded.

A letter was read from Mr. Rd. Pratt, farmer, of Riccall, York, requesting to know whether Mr. John Webster, who advertises himself a member of the College, was legally qualified to assume that title; also whether Mr. Philip Deighton, of Riccall, is a member of the Royal College of Veterinary Surgeons, as he wishes to employ a qualified man.

He was informed that no person of the name of John Webster was on the Register, but that Mr. P. Deighton, M.R.C.V.S., obtained his diploma April 16th, 1869.

A letter was then read from Mr. P. Deighton, of Riccall, York, enclosing an advertisement which appeared in the 'Selby Times' from Mr. John Webster, styling himself a member of the Royal Veterinary College, London, and who states that he passed his examination in 1839.

Mr. Deighton wishes to have the authority to contradict this statement, and refers to the reply which he received from the Secretary in 1868 on the same subject.

He was informed that no further evidence was required than that already given, viz., that John Webster was not a member of the Royal College of Veterinary Surgeons, and that he did not obtain his diploma in 1839.

Another letter was also read from Mr. Deighton, asking the Secretary to prepare an advertisement for the 'Selby Times,' stating that Mr. Webster was not a member of the

College. In reply, the Secretary informed him such a course was out of the question. At his request a copy of the latest edition of the Register was forwarded.

The Secretary reported that, in consequence of a reduction in the number of candidates at the preliminary examinations, only thirteen of whom had presented themselves before the Board of Examiners, he placed himself in communication with Dr. Taylor, requesting to know whether one evening's examination would be sufficient.

Dr. Taylor replied to the following effect, viz., that the question of admitting more than twelve candidates was decidedly opposed by the board of examiners. Two evenings were, therefore, occupied.

The names of the five successful candidates from the Royal Veterinary College who had been admitted members of the body corporate were then read, together with those of the unsuccessful. Also the names of the examiners and *ex officio* members who were present at the meetings.

Mr. Field asked why one student had been examined the second time in December last. He thought it was a very bad precedent.

Mr. Wilkinson explained that it was at the request of Professor Spooner, who thought the first failure might have been occasioned by nervousness.

Mr. Ernes considered such a proceeding contrary to the provisions of the Charter. The Council only had the fixing of the time and manner of the examinations, not the Board of Examiners.

Professor Gamgee said, though no doubt it was very objectionable, it had been frequently done in Scotland.

Mr. Fleming thought, though the re-examination had been undertaken from the best of motives, the other rejected candidates had reason to complain.

Mr. Wilkinson said it would not have been done but for the recommendation of the teachers.

Professor Gamgee thought the teachers ought not to interfere in any case. Though it was understood that the teachers at the schools were *ex officio* members of the Board of Examiners, the names of some teachers were omitted from the list.

Mr. Wilkinson recommended that some communication should be made to the Chairman of the Examining Boards with reference to what had taken place.

Mr. Robinson said the teachers were only present as teachers, not as examiners. If they were down in the Register as *ex officio* members it was wrong.

Mr. Ernes proposed "That a re-examination at the same meeting of a rejected candidate is undesirable."

Mr. Fleming seconded the motion.

The President said he was present at the first examination, and was very much pleased with the manner in which the *ex officio* members conducted themselves

The resolution was agreed to, and the Secretary was instructed to write to the chairmen of each Board of Examiners, communicating the fact that the motion had passed.

The Secretary announced that Dr. Taylor, one of the examiners at the chemical table, was desirous that additional specimen drugs should be provided for the medical cabinet, in order that they may be classified in accordance with the new 'Veterinary Pharmacopœia' by Professor Tuson.

It was moved by *Mr. Wilkinson,* and seconded by *Mr. J. C. Broad*—

"That the specimen drugs for the medical cabinet be purchased."—Carried.

The Secretary read a letter from Mr. Wm. Cockburn, of Glasgow, resigning his seat in the Court of Examiners, in consequence of failing health. His letter had been acknowledged.

Professor Gamgee said,—Mr. Chairman and Gentlemen, I am extremely sorry to find that Mr. Cockburn, who has been a great friend for many years to this College, should be retiring from the Board of Examiners, inasmuch as his well-known probity and standing in Scotland has helped in many ways beneficially to further our interests; and, although from the terms of his note we are compelled to accept that resignation, I trust the Council through their Secretary will express their regret that circumstances should lead to the connection being severed between him and this College, in so far as his position as examiner is concerned. It will be difficult for us to replace him for more reasons than one. I propose, "That the resignation be accepted, with an expression of regret from this Council that failing health should interfere with Mr. Cockburn's devoting his time any longer to the Examining Board in Scotland, at the same time thanking him very kindly for the services he has rendered to this institution."

Mr. Cartwright seconded the resolution, which was agreed to.

The Registrar read over the list of deaths, five names having been recorded since the last meeting of the Council.

Mr. Wilkinson then proposed a vote of condolence with

Mrs. Lawson in the loss she has suffered. He said Mr. Lawson was a gentleman in his mind and in his actions, an ornament to his profession, and universally esteemed, and the Council could scarcely have lost a better man.

Mr. Fleming said,—I beg to second that expression of feeling, and I do so from a sense of the great debt I owe to the memory of the late Mr. Lawson, and also from a feeling that his family in their extreme distress require every consolation. In the list that has been read to-night of those who have left us there is not a name that does not bring home to us more forcibly the lesson of the uncertainty of human life. I have known Mr. Lawson for a lifetime, and had learnt to appreciate his noble qualities in many ways. In a professional point of view his death has been the greatest affliction to us. I, therefore, with feelings of grief, second Mr. Wilkinson's motion.

Mr. Robinson, in supporting the resolution, said Mr. Lawson had been one of his oldest and most valued friends.

The President said,—I am sure that every man here will feel the full force of what has been said, and therefore I need not put this resolution to the Council. His memory is precious to us all.

The Finance Committee reported that they had examined the vouchers and receipts for payments during the preceding quarter and found them correct. The quarterly Balance Sheet of the Treasurer's account was then read, including the investment of £500. The current expenses amounted to £83 19s. 8d., which the Committee recommended should be discharged.

The report was received and adopted.

Cheques were ordered to be drawn for the current expenses.

On the question of the appointment of a trustee in the room of Mr. Lawson—

Mr. Ernes said the appointment should not be made in a hurry. It could be done when the Special Meeting was held for choosing examiners. Was it imperative that another trustee should be appointed?

The Secretary said the solicitor's letter stated that the two surviving Trustees should transfer the stock into the names of the three. The Bye-law required "That three members of the body corporate shall be the Trustees of the College."

Mr. Wilkinson thought the election of examiners was a very important matter at this time, when things were in a fair way to bring about a re-union of the body corporate. It was extremely desirable that the examiners selected should be Scotchmen living in Scotland, in some way known

to the authorities of the different schools. It had always been his opinion that the wishes of the teachers should, as far as possible, be met in the appointment of examiners. It was desirable that they should, without going contrary to the Charter, be made consenting parties to the election. Unless a special meeting was held for the purpose of electing the examiners, there would be an incomplete Board at the next examination, for it would be unfair to ask any gentleman to examine a day or two after their election.

Mr. Ernes said, while agreeing in the main with Mr. Wilkinson, he thought the Council should not be too much dictated to by the teachers. He thought a veterinary surgeon should be a pathologist of all the domestic animals.

The President thought a special meeting of the Council would be competent to elect examiners.

Mr. Wilkinson said they might elect a Trustee at the same time if notice was given.

The Secretary then proceeded to read the following Report from the Examination Inquiry Committee.

REPORT OF THE EXAMINATION INQUIRY COMMITTEE.

In accordance with a resolution adopted at the last Meeting of the Council of the Royal College of Veterinary Surgeons, held on the 6th of October, the Examination Inquiry Committee have considered the propositions made by Mr. Ernes relating to the Bye-laws on the Examinations, and which are—

First. That the examinations be limited to once a year.

Secondly. That they be practical on the living as well as on the dead subject.

Thirdly. That they be by writing.

Fourthly. That they be oral.

Fifthly. That botany and the use of the microscope be added to the subject of the examinations.

Your Committee felt that it would not be to the interest of the profession for the solution of this question to be indefinitely postponed.

It is universally acknowledged that reforms in the system of testing the capabilities of young men for the practice of the veterinary art are urgent.

Nevertheless, your Committee consider it impossible to give effect at once to all the propositions made by Mr. Ernes without meeting with obstacles which might endanger the early adoption of the most pressing modifications in the examinations for the College diploma.

Under existing circumstances it might be absolutely pre-

judicial to the best interests of the students if compelled to resort to a greater extent than at present to that system of cramming whereby they acquire a knowledge of the subjects taught them in the veterinary colleges during the two winter sessions of their attendance.

Your Committee hope that the colleges may soon take the initiative in an extended curriculum of study, which will not only justify but demand additions to the list of subjects on which future practitioners of the veterinary art have to be examined by this College.

Two of Mr. Ernes' propositions are not open to the objection of even apparently precipitating reform. The one is the written examination as adopted by the Royal College of Surgeons and other institutions, which should be provided for at no very distant date.

Students to be examined at the close of the present session might fairly urge that they had been taken by surprise if they were required to undergo a written as well as an oral examination, but this would not hold good for another year.

No such objection can hold good with reference to the examination of students by the side of the living subject, on which they are expected forthwith to practise the healing art.

Your Committee is painfully aware of the fact that the Colleges and their students suffer in the eyes of the world from the complete lack of practical tact, manipulative dexterity, or quick-sightedness of many who seek to enter on their duties as veterinary surgeons so soon as they have received a diploma.

It is, therefore, of vital importance that, with the co-operation of the teaching colleges, the Royal College of Veterinary Surgeons should at once institute a practical examination of candidates for the diploma of the College. The veterinary section of the Board of Examiners should be directed to test the skill of each student in the handling and examination of any sick or healthy animals that can be provided for this purpose, and opportunities will thus be afforded to ascertain with greater precision than is possible otherwise a student's knowledge of superficial anatomy and surgery. The means of securing animals, the methods of applying bandages, poulticcs, and fomentations, the situation of structures involved in the most common operations, can, with other points, be made the subjects of adequate inquiries by the side of a patient in a manner at once satisfactory to both examiners and examined.

Your Committee has, therefore, unanimously adopted the following resolution :

"That, after mature deliberation, the Committee report to the Council that it is considered absolutely necessary that a *practical* examination be instituted forthwith."

THOMAS GREAVES, President,
Chairman of Committee.

Professor Gamgee moved, "That the report be received."

Mr. Ernes said he had purposely absented himself from the meetings of the Committee, although he had been appointed a member. In his opinion the Committee had neglected one of the principal points suggested by him, namely, that the examinations should be only once a year. It was neither to the interest of the College nor beneficial to the students that examinations should be more frequent. The examinations ought to be at the end of the session, as in Scotland. There was a danger, too, in having it just before the General Meeting, which might be influenced by the new blood infused into it. Neither was he satisfied with the result of the Committee's deliberations as to the written examination. The questions now put orally would be put in writing, and that was about all the difference between the two modes. If the last examination had been a written one there would have been no re-examination of any student. It was a very easy matter to carry out the written examination. The students might be placed a few feet apart, papers given to them with the questions which they were to answer, and when they had finished, their replies might be collected and afterwards examined. The Committee, too, appeared to have forgotten that his recommendation was that the practical examination should be on the dead as well as on the living subject. In order to become a pathologist or anatomist the student must be able to explain the different parts of a dead body; this was as necessary as that he should be acquainted with the living subject. He was quite content that botany and microscopics should be postponed, as they were not taught in the schools at present. The Committee expressed a hope that the curriculum of study would be improved, but he doubted very much if it would. The corporate body had been established for a quarter of a century, but what improvements had been made? Did not the schools oppose everything that the College suggested? The Governors did not want improvement, and unless the test was made more stringent by the Council the Governors would never move in the matter.

Professor Gamgee lamented that, after the Committee had thought over the subject very seriously, Mr. Ernes, who had

been most active in bringing it forward and yet had not attended their meetings, should, to a certain extent, weaken the power of the Committee in its attempt at improvement. The Council were one with Mr. Ernes in their desire, but what they recommended in the report was all that could be fairly done at present. They felt that it would be desirable to have a written examination and a practical examination on the dead subject, but there was almost insuperable difficulties to be overcome in making changes of that description. If the Council were willing to act upon the recommendations of the Committee, the question for them next would be how the practical examination was to be carried out. It would have been far better if Mr. Ernes had attended the meetings of the Committee, and discussed the matter there rather than waiting till the report had been drawn up, and then attempting to throw cold water upon what they had done. He believed if the recommendations of the Committee were carried out the veterinary profession and the public at large would recognise that at last the Council were doing something practical to improve the profession.

The report was then received.

Mr. Morgan, in rising to move the adoption of the report, expressed his agreement with Mr. Ernes in considering that the question of yearly examinations was one of primary importance. In the eye of the other schools it was a grievance that the Camden Town school should be privileged to have two examinations a year.

Professor Gamgee said if any other school had four students to be examined they might call the Board together at any time. Mr. Morgan was perfectly aware of that, but it was a subject for complaint that the whole of the examiners should be brought together and a day spent in examining one student from the Camden Town College.

Professor Gamgee said a similar thing had happened at Edinburgh before now.

Mr. Morgan said that such an occurrence must be detrimental to the interests of the College, for the cost of the Christmas examination to the College exceeded the fees paid by the students. He should very much like to have a return with regard to those examinations for the last ten years, giving the number of pupils examined and the number rejected, with the amount of fees paid, and the cost. He believed if such a return was laid before the Council the Christmas examinations would be soon abolished. His opinion was that the low state of the funds of the College was due in a great measure to such examinations. The

Charter did not compel them to have a Christmas examination, and as their practice seemed to favour the Camden Town College more than the other schools it was desirable to put an end to it. The student really obtained no additional knowledge between the May examination and the Christmas one. He did not think many able three-session students would come up for the winter examination.

Mr. Fleming said, as a member of the Committee, that the subject had been taken into consideration, but it was thought advisable to leave it for another opportunity. They were afraid that if they attempted too much at once they might arouse opposition, and fail in their attempts at improvement.

Professor Brown said it was most important that the practical examination should be established at once. It would produce a very good effect upon the public mind, and would meet with no opposition.

Mr. Ernes seconded the motion for the adoption of the report. He had absented himself from the Committee meetings because, when the former Committee brought up their report, it was said that he had led them. He was sorry the Committee had not adopted more of his suggestions, but he was pretty well satisfied with what they had done. How were they now going to deal with the recommendations? Was it necessary that they should be suspended again?

Mr. Hunt said that, as the recommendations did not propose any alteration in the bye-law, it was not necessary to suspend them. He agreed that it was essential that they should introduce the practical examination at once. It was the great thing which the public required. So long as they neglected it they did wrong to two parties,—to the student, by taking his fees without fitting him to perform his duties, and to the public, by palming on them persons who really did not understand their business. Two thirds of the pupils turned out at present did not know how to tell the age of a horse by looking at his mouth.

Mr. Ernes: Do you intend to confine it to horses only?

Professor Gamgee: No; animals.

The President said that, at the special meeting, it was felt that if they wished to do away with the Christmas examination it would be necessary to alter a bye-law, and no end of discussion and opposition would have arisen.

The resolution for the adoption of the report was agreed to unanimously.

Mr. Wilkinson said it would not do to leave the matter in its then condition. Some steps ought to be taken by the Council with the view of at once putting the machinery to

work in order that at the next examinations the wishes of the Council might be carried out. There were many points to be considered with regard to the practical examinations. One thing to be considered was the expense, and how it was to be provided for. If the governers of a school objected to lending their premises, was the Council in a position to provide other premises? Was the expense of the examination to be borne by the Council or by the applicant?

Mr. Robinson: By the Council, of course.

Mr. Wilkinson said that the funds of the institution were in a very low state, and to make any pull upon them for the purpose of the additional examinations without increasing the fee would be a hardship upon the College.

Professor Gamgee: You cannot increase the fee this year, but by all means do it next year.

Mr. Ernes: We ought to make the sacrifice at the beginning.

Mr. Wilkinson said increasing the fee would necessitate an alteration of the bye-laws. There would be no difficulty about the matter if the schools were willing to work harmoniously with the College. He thought with Mr. Hunt, that a practical examination was the great desideratum, and the sooner it was carried into effect the better.

Professor Gamgee said the committee was in duty bound to frame regulations with regard to it. Then the communications could be made to the authorities of the different schools, and possibly with the Horse Guards. He did not see why the barracks should be closed against them if they required horses for the students. While it would be better if the schools co-operated frankly with the College, they ought to be able to do without that co-operation. He trusted that next year the fee would be raised to ten guineas.

Mr. Ernes said there would not be much difficulty in obtaining horses for the practical examination; if the worst came to the worst they could get them from the knacker's yard. They ought besides to examine with regard to cattle, although there were no cattle at the College.

Professor Brown said that in the lairs of the Metropolitan Market there were always hundreds of cattle and sheep.

Mr. Ernes protested against the quarter-hour system of examination.

Mr. Hunt thought that, although it was to be hoped that the schools would heartily co-operate with them, it would still be better for the Council to take neutral ground in this matter. Healthy animals might be used for the examination, the students being required to point out the positions of the various diseases.

Mr. Morgan proposed "That the committee be requested to draw out a scheme embodying the suggestions contained in their report." He agreed with Mr. Hunt in thinking it would be better to have the examinations away from the College, because the students might get to know the animals there.

Mr. Wilkinson said the first thing for the committee to do would be to draw out a scheme for carrying the practical examination into effect. After that had been submitted to the Council they might, through their president, communicate with the various schools. As he himself was a governor he thought it desirable not to remain on the committee. He wished to know when it would be most convenient to have a special meeting of the Council for the purpose of electing the examiners; at the same time they might deal with the question of the practical examination. He supposed that it was the wish of the Council that, in the examinations in April or May next, there should be a practical examination of the candidates.

The President asked if it would be advisable to invite the professors of each College to assist in drawing out a code of rules.

Professor Gamgee said they would be at the Council meeting, and the committee might bring forward their proposal in such a way that it would be open to a little alteration.

Mr. Ernes proposed "That the different schools should be written to at once, before the meeting of the committee, in order that they might know what view the teachers took of the subject." If the schools refused to co-operate with the Council the committee would then decide what other means to adopt.

Professor Brown seconded Mr. Morgan's proposition.

Mr. Fleming seconded Mr. Ernes' proposal. He had no doubt that the schools would assist in framing the rules.

The President: Would you write them to give their suggestions?

Mr. Fleming: First ascertain if they are willing to allow us their establishments.

Mr. Wilkinson said the natural answer from the schools would be, "Let us know what you have to propose." If the governors at the Edinburgh school had taken three months to consider one little point, they would take six months to decide this question, at all events.

Professor Gamgee: They would be sure to shelve it until next year.

Mr. Ernes' resolution was put to the Council and rejected.

Mr. Morgan's resolution was then carried.

Professor Gamgee gave notice that at the next special meeting he should propose that a safe should be purchased to contain the valuable records of the College.

The Secretary then proceeded to read the following report of the deputation to the authorities in Scotland:—

THE REPORT OF THE DEPUTATION TO THE AUTHORITIES OF THE SCHOOLS IN SCOTLAND, 1869.

The members of the deputation met in Edinburgh, at half-past 10 o'clock, on the 1st of November, 1869, for the purpose of making the necessary arrangements for the business of the day.

The President took the chair; and having made some preliminary remarks, a conversation took place as to whether a rejected candidate at the matriculating examination might present himself before a different Board for entrance at another school, or whether he should be obliged to appear before the same Board which rejected him, and whether any time—say a year—should be fixed on during which he should be relegated for further study.

The deputation, having discussed the subject at some length, came to the conclusion that the point did not appear to belong to that part of the business which was the immediate object in visiting Scotland, but rather for the future deliberation of the Council.

The President then explained the purpose of the deputation, and gave the heads of the remarks which he intended to make to the trustees of the Edinburgh School and the principal of the one at Glasgow.

A general agreement having been come to respecting the preliminaries, the deputation had interviews with the principals of those schools, and had much reason for being gratified with the frank and unhesitating manner in which they signified their approval of and adhesion to the great principle to which the Royal College of Veterinary Surgeons was endeavouring to give practical effect.

Mr. M'Call stated that the matriculating examination which already existed at the Glasgow School was more stringent than the one proposed, and therefore he could have no objection to offer. He also stated that he was quite willing that the selection of the board of examiners should be made by the Council, provided the authorities of the other schools would do likewise.

Mr. Williams expressed a wish that, as far as he was con-

cerned, the point should be left for decision of the Town Council.

The deputation then resumed; and after further deliberation resolved that the following be the proposal which should be made to the authorities at Edinburgh and Glasgow:

That a Matriculating Examination be instituted.

To be carried out by an independent Board hereafter to be selected.

And, in order that the examinations may not be too severe for some of the youths who are now studying veterinary medicine at private establishments, the following be the subjects of examination:

Writing from dictation.

Parsing a simple sentence.

Reading aloud.

The first four rules of arithmetic and simple rule of three.

It may here be stated parenthetically that members of the deputation availed themselves of the kind invitation of Professor Williams, and went to hear the introductory lecture at the Edinburgh School.

Shortly after the lecture the deputation was introduced to the trustees by Principal Williams, and received with marked courtesy by Bailie Fife, who represented the Lord Provost and his co-trustees.

The President of the Royal College of Veterinary Surgeons, as chairman of the deputation, then addressed the trustees to the following effect:

Professor Williams having introduced the deputation individually, the President addressed the Town Council as follows:

Bailie Fife and Gentlemen,—The deputation that has now the honour of waiting upon you has been appointed by the Royal College of Veterinary Surgeons. It consists of veterinary surgeons from various parts of England and Scotland. Many members of the deputation are Scotchmen who have matriculated at this College, and feel a deep interest in its welfare. We are all animated by the best feelings for the good of this College, as well as for the profession in general. The object we have in waiting upon you to-day is to bring before your notice and to advocate the desirability of instituting a preliminary examination of the youth at the time when he presents himself for entrance to the College. I may here inform you that it has been the custom at this College ever since it was founded, and the same custom has prevailed at the London Veterinary College and the Glasgow Veteri-

nary College, viz. to receive all comers, irrespective of their being educated or illiterate youths; the result of this has been that many of these illiterate youths, incapable of being taught, cannot be made to understand the technical terms which are necessary to be used in teaching the Veterinary Science; and after spending two sessions at College they appear before the examiners for their diploma, and are found utterly unfit to be received into the profession. They are rejected—they return to their homes as farriers, blacksmiths, grooms, or whatnot. But some few of these illiterate youths, through some good luck, or being a little sharper than the others, do squeeze themselves through, pass, and get their diploma. They return home and practise as veterinary surgeons, but owing to their illiterate state, their treatment is defective, and their habits lead them to associate only with such like, thereby bringing down disgrace upon the profession to which they belong. This state of things has seriously retarded the progress of our profession, and, we think, should no longer be permitted to go on. I may further inform you that the London Veterinary College for the last five years, and at the Glasgow Veterinary College for the last two years, a preliminary examination has been adopted with the best results. It was very simple at the beginning, but is now more stringent. It is found that the class is larger, better and more select, better behaved, more readily taught, and, when they come before the examiners, they are found qualified to pass a better examination, and it is quite natural to suppose they will acquit themselves with more credit to their profession when they get into practice. Thus it will be seen our desire is to advance the respectability of our profession, and at the same time to add materially to its usefulness. I beg further to say these examinations have been conducted hitherto by one of the Professors at either College, but it is found objectionable for many reasons; one is, it may happen to be the youth which is being examined is the son of a particular friend of the examiner, and he feels a delicacy in rejecting him; again, neither professors nor any other men like to throw their own living away, several students are willing to become pupils with their fees in their hands, but must be refused by the teacher. It has therefore been deemed desirable that the duty should be delegated to some competent and independent body, such as the College of Preceptors, who are a chartered body of men; they examine the youths as to their scholastic attainments who enter the College of Surgeons in London, also the youths as they enter the College of Physi-

cians, also, I believe, the national schoolmasters who are appointed by Government. I find their charter of incorporation only extends to England and Wales, not to Scotland or to Ireland; but there are other institutions in Glasgow and Edinburgh equally eligible to perform the duty. The teachers of the High School of Edinburgh, or the Society of Arts, for instance, would willingly undertake the duty. In conclusion, I may say the Governors of the London Veterinary College have been in communication with the College of Preceptors, and they are quite willing to undertake the duty, and commence that duty next session, provided this College will enter into a similar arrangement. The Glasgow College is perfectly willing to do the same. We suggest that the Principal of each College should enter into an arrangement with each other not to receive any youth at their Colleges during twelve months after such youth may have been rejected at one of the other Colleges. Trusting that I have made myself understood, that you will see the importance of our object, and give it your favorable consideration, I will now, with your permission, call upon Mr. Wilkinson, who is not only one of the Governors of the London Veterinary College, but is the Principal Veterinary Surgeon to the Army. He will explain further our object.

The President then requested the trustees to hear Mr. Wilkinson, one of the deputation, who said that, as the President had so completely exhausted the subject, it only remained for him to support the cause which had been so clearly explained by the President, and which the deputation was advocating by stating, in illustration of the necessity for the movement, that at the examination by a Board of Military Veterinary Surgeons, which takes place prior to entrance into Her Majesty's service, it was too often found that the education was so deficient as to render the examinations unsuccessful; and that the members of the board have frequently given expression to a conviction that no teachers, however highly talented, could impart a scientific professional education to men of such uncultured intellect. Mr. Wilkinson concluded by expressing a hope that the trustees would take the widest view of the subject, and give their powerful support to the movement.

As no other member of the deputation wished to address the trustees, Bailie *Fife* arose and said in effect that the Town Council felt much gratification in meeting a deputation composed of eminent members of the veterinary profession, who had come from all parts of the United Kingdom, amongst them some who had graduated at their own college, thus

showing how deep and how united was the feeling of the profession on the subject. He regretted the absence of the Lord Provost, who would have given his best aid to the undertaking. For himself he wished to say that no one could be more desirous of the advancement of the veterinary profession than he, Bailie Fife, was, and he felt that he was fully acquainted with the subject in all its bearings, inasmuch as, some years ago, he had held a leading position in a somewhat similar movement in connection with the medical profession. He was sure the principle upon which the Council of the Royal College of Veterinary Surgeons had based its present action was a true one; that he fully sympathised with and would give it every assistance when it came before the Trustees in due time and form.

Bailie *Cattanack* expressed himself as entirely in accord with Bailie Fife as to the necessity for and approval of the steps which were being taken, and the movement should have all his support.

A short conversation took place here between a Trustee and the President, with reference to the required standard of education which the deputation proposed to initiate. Mr. Menzies, Secretary to the Highland and Agricultural Society, was present, and took part in the conversation; and both those gentlemen being satisfied with the explanation which the President gave—

Bailie *Fife* (having ascertained that no other gentleman wished to speak) proposed that the subject should be put into such form as would enable him to bring it officially before the Town Council. The *President* said that he would give attention to that point, and then the meeting was dissolved.

Statement left with Trustees.

Mr. Chairman and Gentlemen,

As already stated by Principal Williams, we are a deputation from the Council of the Royal College of Veterinary Surgeons to confer with you on the subject of the general education of the Veterinary Student.

We present ourselves under the very exceptional circumstance of a body of men who ask leave to be allowed to improve their professional and social position.

The Council of the Royal College of Veterinary Surgeons has long been painfully sensible of the fact that neither the one nor the other is either what it should or might be; and it considers that now, as narrow views are giving place to more enlightened ones, a favorable opportunity is offered

for enabling it to acquit itself of its very highest duty, by seeking to make some important advances.

The Council has, from time to time, been made conscious of the very little progress which has followed the existing system of entering the schools; and is fully persuaded that at least one of the causes of the almost moribund condition of the body corporate is traceable to the pupil's being admitted to a participation in the professional teaching, without having been subjected to a test as to his general scholastic abilities. And the Council feels it to be a reproach that the mode of testing which is now so extensively resorted to in all situations of life, where learning is necessary, has not yet been fully applied in the case of those whose ultimate object is to become members of the Royal College of Veterinary Surgeons.

There are alleged difficulties in the way of amendment in connection with this system, but we feel sure that they are more imaginary than real, and are capable of easy adjustmen

One of the difficulties which presents itself relates to the professor's interest in the admission fees; but we think that we are justified in concluding that any apprehension on this head must be unreal, for, in the instances in which the educational test has been introduced, the number of students has increased, and it has been said that there has been an appreciable advance in their general intelligence. In this circumstance we have a full assurance that the interests of the professors will proceed *pari passu* with those of the Royal College and those of the public, which are so closely and inseparably connected.

Another apparent difficulty is shadowed forth in that phase of the subject which bears upon the obligations which the Royal College may be said to be under to those youths who have now commenced their study of veterinary medicine, with the prospective intention of completing their professional education at one of the schools in the United Kingdom. Upon this point we may venture to express an opinion that the proposed examination should be subject to such modifications as the interest of those students and the obligations which the Royal College is presumably under may demand.

So that, although the necessity for a much higher standard of education cannot be exaggerated, the proposed system of examination will be gradually increased, and not carried into full effect for some time.

We have reason to believe that the other schools are prepared to give their adhesion to the scheme which we are

advocating, provided that the Edinburgh authorities adopt it. It is, therefore, self-evident that the result of this meeting will, for weal or for woe, mark a most important epoch in the history of our profession.

In conclusion we wish to say that, being too sensible of the necessity of effecting great amelioration in the status of the veterinary medical profession, while keenly appreciating the just demands which are made in the interests of the public, having due regard to the welfare of the several schools and their respective professors; and having given very careful consideration to the various divisions of the subject, the Council has come to the deliberate conclusion that a matriculating examination is an absolute necessity, and this deputation, acting under the authority of the whole profession, as represented by the Council of the Royal College of Veterinary Surgeons, respectfully solicit the co-operation of your lordship and your brother trustees in support and furtherance of our laudable object.

We propose the examination shall be on the following subjects, namely:

Writing from dictation.

Parsing a simple sentence.

Reading aloud.

The first four rules of arithmetic and simple rule of three.

Signed by the President and each Member of the Deputation.

1*st November*, 1869.

Mr. Ernes asked if the Council had received an answer from Edinburgh.

The President said they had not up to the present time, but they were daily expecting one.

It was moved by *Mr. Wilkinson*, and seconded by *Mr. J. C. Broad*, "That the report be entered on the minutes." Carried.

By order of the Council,

William Henry Coates,

Secretary.

IRISH CENTRAL VETERINARY MEDICAL ASSOCIATION.

The last meeting of the Association was held in the buildings of the Royal Dublin Society, on the 7th inst., the President, the Hon. Montague Mostyn, in the chair.

Members present:—Mr. Steel, Mr. Murphy, sen., Mr. Lambert, Mr. Simcocks, Mr. Reilly, and Mr. Collins, and several members of the sister profession were likewise present as visitors.

Letters of apology were received from several members who were unavoidably prevented attending the meeting.

The minutes of the last meeting were read and confirmed.

The deaths of two members of the Association were recorded, that of Mr. J. J. Farrell, of Wicklow Street, and Mr. McDermott, of Belfast.

It was proposed, seconded, and carried unanimously, that a letter of condolence should be forwarded to the widow of the late Mr. Farrell.

A communication was received from the Yorkshire Veterinary Medical Association, enclosing a resolution passed by that Society, "That it is the opinion of this Society that the Veterinary Medical Societies in the United Kingdom are of sufficient importance to be represented in Council; and further, this Society is of opinion, that if each Society in the United Kingdom would send one of its members to represent its views in Council, the profession would be more thoroughly represented, and thereby the Council so constituted would be better able to bring about the desired changes which are so much needed, and which are so essential before our profession can claim that status in society which, as one of the liberal professions, it has a right to expect."

The above resolution was put to the meeting, and every member fully concurred in its importance and necessity, more especially as Ireland is not represented in any way in the governing body of the profession.

The President then delivered the following address:—

Gentlemen,—Following the established custom of the Veterinary Medical Associations held in England, I feel it to be my duty to deliver to you an inaugural address. This, properly, I ought to have done at our last meeting, but which I stated at the time, owing to accidental and unforeseen circumstances, I was prevented doing. Usually the address is devoted to a resumé of the progress and advancement which has accrued to the science during the past year, confined as these meetings are to members of the profession.

But, gentlemen, as we are a new Association in Ireland, and seeing the interest the public have taken in the formation of this Association, coupled with the erroneous views as to its objects, and also of the proper position of qualified members of the Veterinary pro-

fession in contradistinction to the unqualified practitioners and "soi disant" veterinary surgeons, many of whom we have a high respect for, except in reference to their assumption of a title to which they have no claim, I deem that I shall best advance the interests of this Association, and the qualified members composing it, by departing from the accustomed course, and addressing the few remarks I make to the public instead of confining them to strictly professional topics, with a view to remove their prejudices, and make more apparent the claim that veterinary medicine has to be considered among the scientific institutions of this country, along with the sister science of human medicine. That veterinary science is second to human medicine is due to the fact that human medicine deals with subjects whose worth cannot be estimated in money, whilst veterinary medicine is ever hampered in all its cases with considerations of the value of the patient after restoration to health. I do not think our critics sufficiently take into consideration the fact that the market value of our patients must always limit and cramp the efforts of our profession, for we all have heard remarks implying that the science itself is unable to treat many analogous diseases to those affecting the human subject, and which the sister profession can successfully cope with. I hope, however, to be able to show that this is an erroneous view so far as it refers to any deficiency in the science itself, or want of knowledge on the part of its professors. Cases often occur which are quite amenable to treatment, but where the owner must be informed by the veterinary adviser, as an honest man, that in all probability, for the purposes the animal is used, it will not be to his interest to incur the costs of attendance and feeding; and the advice of the veterinary surgeon to that effect is frequently looked upon as a confession of inability to cope with the disease, when in reality he is only endeavouring to save the owner's pocket. There is another most important consideration; man as a rule is an intelligent being, and will conform to the regulations laid down for his guidance; he will remain in one position, a position which his medical attendant thinks best suited to facilitate recovery; will calmly submit to a course of treatment which *per se* is irritating, and himself secure the careful carrying out of such treatment. With the lower animals the case is vastly different; they frequently obstinately oppose your best endeavours to secure perfect rest of the whole or part of their bodies. In many instances the very apparatus employed to endeavour to bring about repose in a portion of the body a limb, for instance, proves a greater source of irritation than the original injury, and thus it is that our best efforts are oftentimes completely frustrated, and thus the necessity arises for a longer period of treatment to bring about recovery.

A man who has suffered from severe inflammation of the lungs is not put into training for a race, or other form of exercise demanding a great call upon his breathing powers, if he is not sent off to a milder climate, so that even in a state of comparative quiescence the lungs are but gently called upon for the exercise of their powers. Being a reasonable creature, and not subject to the will of another, he can

stop and rest as soon as he feels exertion hurtful. This is widely different from the unfortunate horse, who is expected, as soon as the acute stage of disease has succumbed to the effect of the remedies employed, to be ready to take his turn of the work; no mild climate and repose as soon as exertion becomes hurtful, but an early start, a cold wait at the cover side, followed by a sharp burst calling upon all the respiratory powers to a great extent, even if no disease had previously existed, instead of as now pressing upon parts which have not recovered their tonicity; for long after the apparent mischief has passed away, in all cases of inflammation a weakness remains in affected parts, and an inability to respond to extra exertion which but few professional men have any idea of.

Or take a case of dislocation or fracture of one of the extremities. The human subject is told to keep at rest after the reduction for a period varying according to the nature of the injury, perhaps for months, and then to return to work gradually; he is assisted through the various stages of recovery by mechanical appliances for relieving the part; but in the animal a considerable amount of extra irritation is caused by the necessary appliances to enforce a state of comparative repose, in addition to that set up by the accident. The restlessness induced by these necessary restraints goes far to negative the good results of them, and has to return to work long before the parts are in a fit state to stand the amount of exertion required of them, simply that he may pay back some part of the expenses incurred during treatment, to say nothing of the loss of service. The value of horses and cattle varies in accordance with their various spheres of duty, and the uses to which they are put; for while some people may not object to an unsound animal—by which I mean an animal defective, but not suffering from pain—others would have an insuperable objection to such an one being in their service, and this brings to my mind an illustration of the difference in the value of animals, according to the uses they are put to. During the period I was attending the lectures at the Royal College in London, I went down with the learned President of that Institution, to whose teaching in a great measure I owe what little veterinary knowledge I do possess, to visit the establishment of the largest and most successful breeder of thorough bred horses in the kingdom; during our inspection we came to that animal, "Dundee," whose game struggle, unsuccessful though it proved at the close of the race, for the highest prize upon the turf, must ever mark him as one of the gamest horses that ever ran. The Professor's remarks were to this effect: "Mr. Mostyn, if that were a £30 hack or a gelding, his value would be the price of his skin as an animal used simply as a servant, from the nature of the accident rendering him useless as a riding or draught horse; but as the progenitor of a race of animals likely to inherit his courage and speed, the results of his accident not being hereditary, his value is some thousands."

If this is so with horses the case is much stronger with cattle. Few animals there are in the ordinary run of stock, excepting the highly bred ones used for the propagation of their species, that can

pay the cost of treatment in many diseases, from the fact that they lose so much of their market value as beasts fit for our consumption as food; so, though "*stamping out*" may seem unprofessional in many cases, it is the cheapest, and in that sense the right one, as was proved in the recent outbreak of cattle plague; the danger of infection to other sound animals, the isolation from them on farms, except in a few favoured places, being impossible. Prevention of disease is what we have to look to, and we have seen in the present session the legislature have viewed the matter in its proper light, and in the event of certain diseases being imported from abroad, instead of being allowed to run their course unchecked, there is a fair chance of their being extinguished before they have gained any great hold in the country.

Taking warning by that severe visitation in England, and the advice of those who from the first predicted what would occur unless restrictive measures were carried out, the public has come back on this question to the advice and assistance of the properly constituted guardians of the health of its domesticated animals, to those men who had made the study of disease the labour of a life, in contra-distinction to amateur advice, an additional proof, if any were wanted, that in veterinary science, as in all other arts and sciences, a strictly professional course of study is requisite, and that no royal road leads to its acquirements; no matter what branch of industry or usual amusements of life is selected, the professional, the man who has gone through a systematic training in that particular branch, beginning at the bottom and learning it step by step, wins in the end. Take the subject of painting, is there an amateur whose production, when compared with very ordinary pictures by professionals, comes near them? The eye may be caught by tricks of colouring, but look at it closely, and the faults of an early hurried training are clearly perceptible. So in music, the prodigy of the drawing room, brought before the public on the arena of the stage, fails when in competition with the ordinary students of the academies, even before his own select circle of admirers. The highest compliment that can be given to his performance is that it is professional. Take the turf, so well acknowledged is the principle, that even with a severe penalty in the shape of increased weight where the contest is at all close, the amateur horseman is nowhere, his well meant but injurious efforts impeding instead of assisting the animal he is guiding.

And here I may briefly run through the history of the science, though I fear to many it can only be a repetition of what has often appeared in the *Veterinarian*.

In the early days of the world's history, the professors of the healing art seem to have practised indiscriminately. Hippocrates is the first whose name we find in connection with veterinary as with the sister science.

Virgil, in the Georgics, gives minute directions about rubbing sheep with sulphur, oil, and hellebore, for skin disease, and refers to the habit that animals, feeling the first symptoms of disease coming on, have of isolating themselves from the rest of the herd.

Columella, in 'Scriptores rei Rustica,' treats of the diseases of sheep at some length, describing a pustular affection by the name of "ignis sacer."

Vegetius, who lived about the middle of the fourth century, seems to have had considerable experience among horses, and some of his remarks show him to have been a very close observer, however much his practice was faulty.

The incursions of the barbarians later seem to have swept away all other records that might have existed, and it is not till the sixteenth century that we find any works treating on veterinary medicine. In Venice, a valuable work was published by Ricini, the plates of which were copied by many succeeding writers on anatomy. In England we had Gervase Markham, who was an acute observer of the habits of domestic animals, and although his practice was absurd, his medical knowledge was on a par with the physicians, chirurgeons, and apothecaries of the sister art, whom we find dismayed and perplexed, surrounding the deathbed of Prince Henry, eldest son of James I, and driven, as a last resource, to the application of a cock cloven by the back to the soles of the feet.

In 1761 the first step towards putting the science on a proper footing was taken by the establishment of the Veterinary College at Lyons, followed in 1766 by the institution of the College at Alfort, which, from that time to the present, has held a prominent position, enjoying a European celebrity from the discoveries emanating from its walls, and the knowledge and character of its professors, and the skill of the men who have passed out, gained, however, at a frightful and unnecessary cost of suffering to the unfortunate animals. Vivisection, though not done away with, is, I believe since the time I was there, restricted to narrower dimensions, thanks to the praiseworthy efforts of the Royal Society in England, and the support which the Emperor afforded them.

1791, Mr. St. Bel, who had previously been educated at Alfort, established the London College, in spite of much opposition. He was succeeded by Moorcroft, and after him by Coleman, whose theories have not been attended in practice with the success that was anticipated at the time of their enunciation, though by his eloquence, and the assistance he received from Sir Astley Cooper and Hunter, he did much towards bringing the science into note, and raising the standard of examination. A crowd of authors followed, one of the most illustrious among them being Mr. Percivall.

In 1810, Mr. Dick, who had received his professional education under Professor Coleman, started the Edinburgh College, and was followed later by Mr. M'Call, at Glasgow. However much the institutions may disagree on minor questions, they all agree in their efforts at imparting a sound professional education. As a rule, pupils enter after an apprenticeship of three years* or so with some established member of the profession, during which time they become acquainted with various forms of disease and the habits of the

* This is not compulsory, but I think I may safely say a considerable portion do so.

animals. At the London College a preliminary examination is demanded in the rudiments of an ordinary English education, and, if the student passes satisfactorily, he is admitted. The day begins with an anatomical lecture at 9 a.m; at 10.30 alternately there is one on chemistry or cattle pathology; and at 12 a lecture on the physiology and pathology of the horse. The intervals between the lectures are devoted to visiting the patients in the infirmary, under the guidance of one of the professors, or in attending at the examination of horses as to soundness. The afternoon is fully occupied in dissecting, and frequently an additional lecture is given by the demonstrator. In the evening many of the students attend the private classes held by the professors. It is seldom a student finishes work before 10 or 11 at night, if he takes advantage of every opportunity which is afforded him to acquire a proper knowledge of his profession.

It is much to be regretted that the law allows men who perhaps have been rejected at the examination table, or turned away for bad conduct, to call themselves veterinary surgeons, and practise under that title. Many among the public are not aware of this, and I have often had great difficulty in getting people, who have complained of the ignorance shown by the individuals they have employed, to understand that the individuals alluded to never attended a lecture in their lives; they have got hold of a few works on the subject, make up generally very powerful vesicants and drastic purges, which by the ignorant are looked on with great respect for the violent efforts produced, and start boldly with the title of veterinary surgeon over their doors. Not so in the medical profession; there the title is carefully guarded, and if the public choose to employ any others, they do so with their eyes open. Until the legislature stops the assumption of the title of veterinary surgeon as defined in the charter except to those who have passed through the line of study laid down, and received the diploma, I do not see that the examining body of the Royal College can call for the higher standard of qualification which has lately been so much insisted on, and which I hope soon to see established; but it is not fair to lead men to incur the expense of living the best part of two years in a large town, fees to colleges, &c., and then give them a title which confers no practical privileges upon them over men who are profoundly ignorant of anatomy, physiology, and pathology.

Professor Varnell, in an introductory address delivered at the Royal Veterinary College in London, points out so clearly the necessity of scientific knowledge, that I cannot do better than quote somewhat fully from it.

"The practitioner of human medicine devotes his mind and energies to the relief of suffering humanity, and through his knowledge of the laws of organic life he points out, that is if he properly fulfils his mission, those hygienic and sanitary measures that are best calculated to preserve health. The veterinary surgeon has a similar duty to perform with regard to the lower animals; and as such animals both grow and are nourished by the same laws, and in the

same way as the human species, if a due amount of substance is not supplied to them, they waste and die as you would. Influences varying according to circumstances affect their health; as with us, they have their likes and dislikes, and are rendered comfortable and thrive, or uncomfortable and unthrifty, according to the usage they receive from those who have charge of them. They are subject to disease, most of them similar to those we suffer from, are governed by the same laws as those we are under; they are also cured, if curable at all, by agents of the same nature. Lesions of structure, whether accidentally or intentionally produced, are repaired by the same processes. These processes are retarded or facilitated by the same judicious or injudicious management. In fact, the same treatment, in principle, is applicable to the biped and the quadruped; therefore, for the veterinary surgeon to be as successful in practice as the human surgeon, he must be equally scientific. It must be so. I cannot understand how it should be otherwise if science, as applied to medicine, is of any use at all."

Nothing can be truer than these views of Mr. Varnell which I have just quoted, and which, as expressing my own so fully, I have ventured to copy out.

Anatomy, as the basis of our profession, must be thoroughly known to understand the function of parts and the uses of the various organs in health and in disease.

Pathology, the doctrine of disease, informs us of the various derangements of function and structure, and enables us to discriminate between various forms of disease.

Chemistry brings us to a knowledge of the remedies likely to be of use in combating those derangements, and a thorough knowledge of them is as necesssry to the veterinary surgeon who desires to be anything higher than a mere practitioner as it is to the human surgeon.

The advantages arising to the profession from the establishment of veterinary associations in England being so very great, I need not enlarge upon them, as I should only be doing what has been often expressed in the *Veterinarian*. Science is made up of the combined experiences and observations of its followers; it necessarily depends for its advancement on the careful collection of additional facts. As Mr. Greaves, to whom we are under a great obligation for his kindness in assisting at the foundation of this association last April, says in one of the addresses he delivered some years ago, our object and resolve ought to be to disseminate information broadcast; to indoctrinate the profession: no knowledge is really worthless, no honest search for it in vain.

But I may now be permitted to refer more fully than any of you would, perhaps, feel inclined to, to the great mischief which has arisen to the profession in this country from the personal jealousy which exists among so many of the members of the profession, and the unguarded opinions which are frequently expressed with respect to the manner of the practice of others in the same profession. I suppose there is no man in any of the learned professions who has

not, from inadvertence or haste, overlooked or mistaken some symptom; but this is not an object for congratulation, nor do we find it so among other professions. Competition may, and does, in the other professions, make men run hard with each other; but the private interests of its professors are always made subservient to those of the profession at large, and this is what I hope these meetings will ultimately effect for our profession.

Before concluding I may be permitted to express our great appreciation of the advantage which, thanks to the Royal Dublin Society, we possess in holding our meetings in this building, and severing first the connection which so lowers the profession in the minds of many—the "pot-house association."

Since our last meeting we have to regret the loss of one of our members, Mr. Farrell, who, from the first idea of its establishment, gave it his most cordial support. Holding one of the highest positions among the members of his profession, both for his professional knowledge and general rectitude of conduct, his death will make a blank we cannot easily fill up. Mr. Farrell was the first to apply to our subject that important discovery in medicine, the transfusion of blood from a healthy subject to one suffering from the effects of debility, which in many instances he carried out with the best results; and also for the discovery of one of the most potent remedies in acute inflammatory action, Farrell's vesicant holds a place in our practice which, up to this time, no other possesses that we are aware, counteracts the ill effect of inflammatory disease.

We have likewise to regret the death of Mr. M'Dermott, of Belfast, whom, unfortunately, we had not the pleasure of seeing amongst us; he joined us warmly in the onset of the Association. Unfortunately sickness overtook him, and he passed away without an opportunity of imparting to us the benefit of his valuable ideas upon the treatment of disease gained through a lengthened course of practice.

Mr. Malcolm read his paper on "Colic and Enteritis."

The reading of the essay was followed by a long and very interesting discussion, in which nearly all present took part.

The proceedings terminated with a vote of thanks to the Chairman and Essayist.

The next meeting of the Association will take place during the Punchestown Race week, in April next.

[We have been obliged to postpone the publication of Mr. Malcolm's essay in consequence of the length of the report of the Council meeting of the Royal College of Veterinary Surgeons.]

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

The above Society held their usual quarterly meeting in Mrs. Cumming's Hotel, Lothian Road, Edinburgh, on Wednesday, 22nd December, at 2 o'clock p.m. The meeting was well attended.

Present: Professor Williams (Edinburgh); Messrs. Baird (Edinburgh), Aitken (Dalkeith), M'Cormachie (Selkirk), Boothwick (Kirkliston), Cunningham (Slateford), Anderson (Glasgow), Cummings (Edinburgh), Aitken (Edinburgh), and the Secretary.

In the absence of the President (William Robertson, Esq., Kelso) through pressing professional engagements, Professor Williams (Edinburgh) was called to the chair. The minutes of last meeting were read and approved of.

The private business of the Society having been concluded, the Chairman stated that Mr. Cunningham would now introduce his essay—

On Some of our Successes and Failures in Practice.

It is with some regret, but yet with pleasure, that I find myself in my present position. I cannot but feel that the bringing forward of this, the third paper for discussion, should not have been entrusted to me, when other members, from long practice and experience in the profession, are better qualified and more entitled to address you. Still, convinced of the benefits of our association, and anxious to do all I can to promote its advancement, I willingly avail myself of this opportunity to try, at least, to perform part of my duty towards it.

In choosing a subject on which to address you, I have had some little difficulty. I at first thought of making a few remarks on some particular disease or class of diseases; but it occurred to me that such, probably, would be the subjects of future essays and discussions, and that it would be better first to take, as it were, a general look at our practice, to ascertain, if possible, how we stand with regard to it.—What good have we done, what evil checked? What diseases do we think we understand, and can prevent or cure, and what as yet baffle our best efforts? What difficulties can and have we overcome, in what have we failed, and so on? Of course, I could not expect to do justice to such a subject; neither shall I attempt it; but it appeared to me that were I to go over some of the principal diseases with which we have to contend—stating in general terms those we treat successfully, and those in which we too often, if not always, fail—it might furnish matter for a discussion which would tend to show us the real state of practice among us; show us, more especially, on what subjects we are deficient, and on which it may be most interesting and profitable to have essays and discussions; give us, in short, something definite, against which our efforts at improvement may be directed. Con-

fining myself, therefore, to horse and cattle practice, and presuming that we all have our successes and occasional failures, allow me to make a few plain—very plain—remarks on some of them.

Our everyday practice, I daresay, most of us find to be a mixture of pleasure and vexation. When cases turn out well, when good weather, good treatment, and good pay attend us, we feel we would exchange our lot with but few; but when bad cases turn up; when too hard work, no thanks, and little pay are our portion, we are apt to become vexed and dispirited. At such times it is pleasing to reflect that we have, at least, done our duty; if we can't do all the good we desire, we have at least done, and are doing much, and are moreover, the means of preventing others doing an incalculable amount of mischief.

Setting aside the positive good we do, our indirect influence is great. Farmers and other owners now feed and treat their stock better and have fewer losses than formerly; horseshoers do their work better; trainers and grooms have some slight idea how to behave toward a sick horse—for the most part, they take the credit to themselves. What would have been the state of matters with them had our profession never existed?

In places where veterinary surgeons are few, the number of cases of poll-evil, fistula of the withers, neglected quittors, and canker of the foot; of deaths from colic, influenza, chest diseases, and such like, is surprising—there the whole artillery of the farriers is *still* in operation: bleeding, physicking, and drugging; drawing the sole, cutting out the glibes, the haws, and worms in the tail, &c.; and in very secluded places I have met with a few of a race whom I thought existed only in heathendom, viz. *charmers*, to whose voice, however, disease does not listen, charm they never so wisely. Wherever well-educated veterinary surgeons go, such evils disappear, and poor suffering brutes may be thankful to them, were it only for the evils they counteract.

While congratulating ourselves, however, it may be well to inquire do no evils *now* exist among us? Smiths, we know, are still too free with the lampas-iron; dogs' ears are cropped. Why do we dock so many horses? For one whose looks are thereby improved, there are half a dozen none the better, but the worse for it. Must farm-horses be docked because their tails are occasionally bruised by the fronts of their carts? Can no simple mechanical contrivance be invented to prevent this? Again, are there no remains of the drugging system among us? Is the conduct of those practitioners justifiable who charge little for attendance, but make up for it in medicines? Is it right that poor brutes are to have enormous doses poured over their throats in order that their doctors may make up a bill? From what I have seen, I believe, if we do our duty and please our employers, we may make out our accounts as we like, provided we satisfy them our charges are reasonable. And here, though foreign to the subject, we might raise and discuss the question of discount to servants (in money or otherwise). We are all agreed it should not be given. Can we always dispense with

it? But leaving this subject, let us turn to an important matter of practice, viz.:

Lameness.—The detection of lameness is our every day duty; its importance cannot be over-rated. Without being a good judge of lameness one has little chance, more especially in town practice, of success. This was the sphere (as has often been remarked) in which Professor Dick excelled. Early dissatisfied with the various theories put forth, he proceeded to investigate and ultimately to prove that these theories, though elaborate and plausible, were erroneous, and has left us such a knowledge of the true nature, seats, and causes of lameness, as we and others have good reason to be thankful for. And allow me in passing, gentlemen, to remark that I believe Professor Dick will always be remembered as the "Great Simplifier" (if I may so speak) not only of the methods of detecting lameness, but of many other branches of veterinary pathology.

I think, therefore, I may safely say that generally speaking we are well up in the matter of lameness. Now and then a case may puzzle us, but for the most part we can tell at once where a horse is lame, and do what we know to be best for him. If we can't always cure, we can at least tell what is wrong and advise accordingly. We know the various seats of lameness and may infer the cause. To "examine the foot always" has been the rule taught us, a rule the best of us cannot afford to dispense with. To diseases of the feet much attention has been paid—the nature, symptoms, and treatment of acute and chronic laminitis explained, its causes pointed out, and people taught to avoid them. Quittors, sandcracks, corns, canker, foul in the feet, and such like, are not now so common, and when they do occur we know what to do with them. All this is gratifying. Let us turn to the other side of the picture. Shoeing we say is the most common cause of lameness. Are we as yet perfect in shoeing? From the time horse shoes were invented they have been changing in shape and form, and even within the last twelve months some have been found preferring the "good-enough" to the "common" shoe, some upholding the French system, while with others the india-rubber pad was to be a solution for all errors past and present. These facts alone, I think, are sufficient to show us that we have even yet much to learn as to shoeing.

Bad cases of lameness also often trouble us. Incipient disease shows itself in some of the joints or tendons, and too often, in spite of the common course of fomentations and counter-irritants, becomes confirmed, the horse continues lame, it may be permanently so. Can no other means be tried with such cases? Would more severe measures at first, longer and entire rest afterwards, be efficacious or practicable? Again, when rheumatic fever prevails as an epizootic among cattle, when joint-ill attacks young stock, our practice is not altogether satisfactory. What do we know of rheumatism in the horse? Why does it follow attacks of influenza or chest diseases? What determines its seat to the tissues around the sesamoid bones? How and why does it shift from one leg to another? are questions to which still I fear we can return but very indefinite answers.

Again, there are some diseases of the bones with which we are not too well acquainted, diseases affecting the whole osseous system more or less (osteo-sarcoma, perosis, and such like), in which tumours form and the bones change in structure and character, becoming soft, spongy, and flexible, or hard, porous and brittle. I have had several of such cases among horses; they are not so easily detected as one would suppose. But let us now turn to—

Diseases of the Digestive Organs.—These I need scarcely say are numerous and highly important. Frequent, sudden, often severe and fatal, their treatment constitutes a large part of our practice, and they are not always our most pleasant cases. It has been said that these are the diseases we best understand, and treat with the best average success. This may be true, yet on looking back with pleasure on the cases of colic, tympanitis, constipation, diarrhœa, of hooven fardel bound, &c., we have treated successfully, how many deaths have we had from some of these causes, from enteritis, peritonitis, rupture, strangulation, and calculi. With the more simple forms of spasmodic and flatulent colic we have but little trouble, enteritis in its milder forms, or at its commencement, we may check; but when a severe confirmed case of acute inflammation of the bowels occurs, death is almost always the result. Many of us, I fear, give up the case at once as hopeless, prescribe the medicines and use the means which experience has taught us are but of little service, and are thankful when death puts an end to the scene. The agony which the poor brute suffers is fearful, and I have often thought how desirable it is that we should have some other agent, some other combination, it may be, of laxatives and anodynes; something which, without creating much expense, if it did not cure would at least render the animal insensible to its sufferings. Cases of constipation also, both in horses and cattle, often cause us great anxiety. I for one confess that I have often been puzzled to know what to do with them. With some, strong and repeated doses of purgatives and stimulants seem to answer best; while with others any approach to those, after a certain stage, only retards the peristaltic action, lowers the strength, and cuts off the hope of recovery. The road to success seems to lie between the two extremes, and is not easily followed. Much unnecessary diversity of opinion exists on this subject; were we at one of our meetings, to ventilate and discuss it in all its details, and come to some practical conclusion as to the best measures for the removal of constipation, I think we would do good service; though the subject be commonplace there are few more important. Of other diseases of the stomach and bowels we need say little. The cause of and remedy for grass-staggers in the horse we know, though with some varieties in cattle we cannot boast of such successful results; rupture, strangulation, intususception, tumours in the mesentery, and such like are beyond our reach. Hernia we understand, and almost every veterinary surgeon can tell of severe cases on which he has operated successfully. Of the worms that infest the bowels we don't know so much as we should; this I presume belongs to "one of the fields in the

domains of pathology" (as our President truly remarked) "as yet almost unbroken up."

Diseases of the Liver I think have scarcely received the attention they deserve. We are rather apt to overlook the important part this organ plays in digestion. Jaundice, inflammation, enlargement, and its other diseases, are not unfrequent, especially among cattle; and many of the cases of colic and disorders of the bowels in horses are due to congestion and derangement of the liver. The spleen, too, we are apt to forget. We know it is sometimes fearfully enlarged, and I have seen it the seat of extensive inflammation and abscesses: while in its relations to the singular disease splenic apoplexy, we have proof of its importance.

Besides their own diseases, the digestive organs play an important part in the origin and progress of those of other organs. Thus many blood diseases arise from bad food or from imperfect digestion. In some diseases of the brain the stomach and bowels participate, disease or disorder of the one produces functional derangement of the other, and *vice versâ*. To the knowledge of these facts may be attributed the comparative rarity of such disorders as black quarter, and our success in red-water, staggers, puerperal fever. weed, &c.

Let us now pass to

Diseases of the Respiratory Organs.—Of their importance we are all aware. In all our practice we have none, I think, that require more care and attention—none more insidious in their attack, and more difficult to diagnose—none more susceptible to the benefits of good treatment, or more easily affected by neglect or errors of judgment. Diseases of the chest are now better understood and more scientifically treated, so that in horse practice, at least, fatal cases are comparatively rare, and many of these might be prevented were they sooner put into our hands, and had better accommodation been provided and attention paid to them by those in charge. Indeed, I go the length of saying, that were a good veterinary surgeon always to get his cases of bronchitis, pneumonia, and pleurisy in their first stages, and had he everything he desired as to good ventilation, housing, and nursing, some seasons he might lose more than others, yet his average losses would be very few indeed. If such be the case among horses, why do we so fail with pleuro-pneumonia in cattle? The old reasons still hold good; setting aside the question of its infectious character, the pleuro-pneumonia epizootica of cattle is of a different character to, and a more deadly nature than, the pleuro-pneumonia of horses, and justice is seldom done to us or our patients. Had we as many horses affected with pleurisy at a time, and had we to treat them in the hot, confined, and stifling, or in the cold, clean, damp byres in which our cattle stand, there would be more deaths among them. Had we even here also all that we wish as to ventilation and attention, our per centage of cures, instead of standing at twenty or thirty, would be very much higher. But we need not enter on this subject. It is

long since we came to the conclusion that it is better to prevent than to try to cure pleuro-pneumonia. It has long been the great bugbear of the profession, our chief thorn in the flesh, as it were; had it not been for it, I believe the standing of veterinary surgeons would have been much higher. People are loth to believe that it won't pay to treat this disease of cattle; they can scarcely believe that the men so successful otherwise fail here; but when convinced, they are apt to forget all the good we have done them, and jeer at us when we tell them that the most we can do is to prevent the disease. If, as our President remarked, and I dare say we all believe, "pleuro-pneumonia might in a few years be banished from the British Isles," the sooner we aid in measures to realise it the better. We trust that the Act now in operation is a step in the right direction, though, as remarked to me by Professor Williams, I fear the clause allowing cattle to be removed for slaughter may be so acted on as to defeat, in a great measure, the very ends for which the bill was framed.

Epizootic, contagious, and infectious diseases have been great stumbling-blocks to us. We have yet much to learn as to their nature, cause, and treatment. Had we known more of rinderpest and "lung disease" when they came among us it would have been greatly to our advantage; and besides these are other epizootics, from which we gain but little credit, the vesicular epizootic or foot-and-mouth disease, rheumatic fever, or the stiffness, for example. The former is not so bad when confined to the mouths and feet; but when it affects the membrane lining the teats and interior of the udder, it is almost as great a scourge to dairymen as the lung disease itself.

Diseases of the Organs of Circulation.—These are not uncommon, but their study is an interesting one. Owing, however, to the fact of their being for the most part incurable, their importance has been somewhat underrated. The various states and appearances of the heart under disease, the seat of aneurism, and other diseased conditions of the blood-vessels, are most interesting to the pathologist, and to us also as practitioners. It is not the first time that a healthy-looking horse has been certified sound by first-rate veterinary surgeons, when a touch of the pulse or a minute's listening at the side would have shown that he had a diseased heart. Pericarditis, I am convinced, exists frequently among cattle, and is often mistaken for, or confounded with, lung disease, and in its first stages with fardel-bound. When a horse dies from hæmorrhage from the nose, it is well when we can dissect and show the aneurism from which it proceeded. With the symptoms of internal hæmorrhage we must be well acquainted. They are generally very distinct; but I have seen cases in which the orifices in the blood-vessel was small, the horse bleeding to death, as it were, drop by drop, present very peculiar symptoms.

Diseases of the blood are now claiming much attention. Diseases formerly attributed to various organs and causes are now shown to depend on an altered, vitiated, or impoverished condition of the

blood. The prosecution of the subject bids fair to clear up many obscure points in pathology.

On Diseases of the Glands and Absorbents we need not dwell. With scrofula prevention is yet the best cure. The principal others are weed, glanders, and farcy. Cases of weed we can generally manage easily. Glanders has almost disappeared—a good example of what may be done with contagious diseases. Farcy now and then shows itself; but owing to better agents for purifying the blood and other means, its ravages are more easily checked and circumscribed.

On Diseases of the Urinary and Generative Organs, also, we will not enter. Somehow I have not been brought much into contact with them. Diuresis, of course, I have often met with. With bloody urine and hæmorrhage from the uterus we have had to do, have seen the penis fearfully diseased, and helped to amputate a part of it; but anything else has been mainly in connection with castration and parturition. More frequent testing of the urine might, however, assist our diagnosis, and show us that disease or functional derangement of these organs exists more frequently than we imagine. The various methods of castration and their consequences and the different phases of parturition are favorite subjects with us as students, and in practice we find the benefit of them. Our knowledge of the organs, however, I think, should be more minute than it generally is. Give a man his knowledge at College, and if he does not afterwards succeed it will be his own fault. According to the head and hands he has got will be his success or failure.

Along with parturition such disorders as puerperal fever in its various forms and inflammation of the udder present themselves. These are still frequent and unwelcome visitors of our byres. The former, however, I think, we now understand and treat better, cases of recovery being not unfrequent. While in those chronic states of induration of the udder in which the animal dies from symptomatic fever amputation might, in some cases, be attempted with success.

Diseases of the Nervous System.—Of the brain, spinal chord, nerves, and their diseases, I think we confess that, though we know something, we would like to know much more. Tetanus, partial paralysis, and some others, we occasionally treat successfully, yet we judge of them more from their effect than from any knowledge we possess of their real nature and cause. Comparatively ignorant of the structure and functions of the organs, we can scarcely expect to understand their diseases.

While admitting the difficulty of the subject, however, I think our acquaintance with the anatomy and physiology of the nervous system, so far as these are known, is not so good as it might be. I admit that I have never dissected these organs under disease with satisfaction. Congestion of the brain and abscess in one of the hemispheres, chronic disease of the base of the brain, and such like, I have seen, and could easily detect; but with the brain, spinal

chord, and some of the nerves of severe cases of tetanus, I could discover nothing abnormal; yet knowing what an effect the least pressure on the brain causes, and that pressure on different parts produces different effects, might there not have been some slight enlargement or softening, some slight inflammation or extravasation of blood on some important part, which I was not competent to detect. I might apply the same remarks to paralysis.

This is not a desirable state of matters, for to diseases of the brain, and, in fact, to all others that puzzle us, we must apply the system by which almost all discoveries and improvements in pathology have been made, viz. first study and know the structure and functions of the parts in health, then examine them under disease.

Diseases of the Eye, in some localities, are mainly important to us in examinations for soundness, while in others they are very prevalent; one can scarcely pass a team of horses without finding some with diseased eyes. With the more simple forms of inflammation of the eye and eyeball, ulceration of the cornea, disease of the mebomian glands, &c., we have but little trouble; but from the cure of specific ophthalmia, amaurosis, cataract, and such like, we are as far off as ever. We may give great relief, but it is generally only temporary.

Diseases of the Skin.—Some of these, as erysipelas and several eruptive disorders, are but imperfectly understood; while others, such as mange and grease, are chiefly remarkable for the vexation and dirty work they give us. Mange and itch, when confined to one or two places, are not very difficult to treat; but where confirmed and existing all over the skin, they are not so easily got rid of. Grease, in an otherwise clean-legged horse, is generally not a very difficult thing to treat; but when it attacks all the four legs of one of those thick, coarse, hairy-legged brutes, what is one to do with it? Carbolic and the mineral acids may do a great deal for them, but their attendants tire of dressing them, and soon they are as bad as ever.

In the treatment of Wounds, Bruises, and other Injuries, I think we are well advanced. Thanks to what we know of the pathology of inflammation and the various healing processes we have not much to complain of. Our dressings and bandages, however, might stand a little renovation. In open-joints and fractured limbs some more effectual and surgical looking appliances might be invented.

As regards operations, allow me only to say that, although we may be skilful enough operators, we are not very expert ones (generally speaking, of course). I have often thought that more careful and minute dissection, and as good a knowledge of the blood-vessels and nerves as we have of the bones and muscles, would give us greater skill and confidence. Our instruments, too, are not always very surgical looking. Good instruments greatly improve the appearance of an operation, and are great aids even to the best operators. From what I have seen, our English neighbours are ahead of us in this respect.

On examinations for soundness I will not enter, simply remarking that far too little time is generally allowed us for them. Some people would have us find out all the disorders that horseflesh is heir to in the short space of half an hour or so. We should insist on having more—in fact, our own—time.

We have thus gone over some of the principal objects of our practice. Our general success is pleasing and encouraging; our difficulties and failures urge us to use every means in our power to improve ourselves, and advance our profession. It may be well, in closing, to ask, Are we doing so? Many a one on beginning practice finds himself not too well qualified for the task; but he studies his cases well, makes frequent *post-mortem* examinations, and tries in every way to improve. By and by his business increases. He has less time for study. Thanks to the excellent habits he has formed, he makes few mistakes. He gains confidence in himself—he can practise as well, if not better, than his neighbours. *Then too often he makes but little further progress. Post-mortem* examinations seem but dirty work, and as for writing out and publishing cases, what is the use of it? From the works and experience of others he has derived much benefit, yet all the knowledge he has gained he keeps to himself. A few well-written cases in the *Veterinarian*, a few disjointed notes at home, are all that remain of many a clever man, many an ornament to his profession. This state of matters may and does to a great extent exist from want of thought, and the want of proper media through which to communicate with the profession at large. Yet evidently many of us want something to rouse us up, push us forward, and make us keep pace with the tide of improvement around us. This something I have always thought we would find in our veterinary medical associations. When well conducted we know we have no better means for further improvement. At them we may make known our success and experience with pleasure and benefit to others, and to them we may bring our difficulties and failures, and receive assistance and encouragement. When a man knows that every now and then he has to write an essay and take part in discussions he has to bestir himself. It pulls him up, and makes him ask on what subjects is he best informed. What new light can he throw on them? and possibly, by showing him his shortcomings, may lead him to renew his student habits, greatly to his own benefit and that of his practice. Were it only for instruction, I think we should support such associations as our own. I have little sympathy with those who stand aloof from them. It seems to indicate the possession of an amount of indifference, self-assurance, and distrust of others, neither manly nor creditable. It appears as if some were possessed of valuable secrets, which others must not share—their practice would suffer. I verily believe that were we to disclose all our secrets (if we have any) to each other, we would be surprised to find how little the majority of us know more than our neighbours. And though greatly benefited mentally by the interchange, our practice in a £ s. d. way would be but little affected. Individual traits of character, good or

indifferent address and appearance, tact, and push, go a long way to make up the sum total of a man's income. If such be the case, I think the sooner we lay aside the professional conservatism we have so long maintained the better; its results have not been very satisfactory. Let us try what liberalism will do for us. In speaking thus I don't mean to say that each is to say to his neighbour, "Whatever you do, I'll do. Whatever you say I'll stand to, and we'll be very friendly, and not go against each other in the least." That is a state of matters we are not likely to see—a consummation scarcely to be wished, and not likely to be realised. The spirit of competition extends even to us. Yet surely veterinary surgeons can behave towards each other as gentlemen and as friends. Surely more of us might meet three or four times a year, and discuss matters deeply interesting to us in a friendly and affable matter. In the midst of success and the best of their days many of our fellow-students and acquaintances have passed away. Surely we should so conduct ourselves as not knowing how soon we too may have to cease from our practice, our cases, and cares. Thus, and thus only, I believe, will the preamble to our rules be realised. A spirit of good will be established among us, and other steps taken towards the right understanding and elevation of our profession.

The essay was listened to with marked attention, and gave rise to considerable discussion, at the conclusion of which

Professor Williams, in a few able and appropriate remarks, proposed a vote of thanks to Mr. Cunningham for his able essay. The motion was seconded by *Mr. Baird*, and carried by acclamation.

The business of the meeting being concluded, the members present spent a very pleasant evening in social intercourse, and separated, after one of the most profitable and harmonious meetings the Society has yet held.

The next meeting of the Society will be held in Edinburgh in February next, when Mr. J. Anderson will introduce a paper; and this being the first meeting of the Society for the current year, it will be succeeded by a dinner, to which all the members are cordially invited.

James Mitchell, *Secretary.*

Veterinary Jurisprudence.

SINGULAR ACTION FOR BREACH OF AN AGREEMENT.

Leeds County Court.

Before Mr. Marshall, *Judge.*

W. Fearnley, veterinary surgeon, sought to recover £17 10s. damages from Mr. J. Pattison, shoesmith, George Street, Leeds.

Mr. Middleton, instructed by Mr. Read, represented the plaintiff; and Mr. Vincent Thompson, instructed by Mr. Whiteley, represented the defendant.

The ground of action was an alleged breach of agreement. On behalf of the plaintiff, it was shown that Pattison sold him, in 1867, the business conducted in Great George Street for £160, the defendant going to Ilkley, and leaving Fearnley in sole possession. This year, however, the defendant seemed anxious to resume his avocation in Leeds, and, after various interviews, an agreement was drawn up by which, for £120, the plaintiff re-transferred the horse-shoeing part of the business to the defendant, but, in consideration of £2 2s. per annum, the plaintiff was to have the use of a small office for his veterinary practice. There was also a clause in the agreement to the effect that Pattison was to use his best endeavours to recommend his customers to employ Mr. Fearnley whenever the services of a veterinary surgeon were required. It was this part of the bargain which was alleged to have been broken. The defendant entered upon the premises on the 1st of June, and from that date to this, although previously he had made 25s. a week by his veterinary practice, the plaintiff never had a single case referred to him. In short, he charged the defendant with having himself doctored the horses brought to his smithy, and with having done nothing to forward his interests. In his evidence Fearnley stated that he had on three occasions seen the defendant operating on the animals brought to him. When the defendant was about to apply a remedy in a "sitfast" case, the plaintiff entered the smithy, and Pattison said to him, "Here! you might as well have the shilling as me." Plaintiff replied, "I should think I should." On another occasion, Pattison lanced an abscess on the hip of a pony, and he had also administered balls to a horse. Corroborative testimony was adduced in support of the plaintiff's evidence, and then Mr. Thompson submitted that the cases in which the defendant had operated as a veterinary surgeon had occurred at times when the plaintiff was not in the way, and that he was not bound to send for the plaintiff, as he was at liberty to exercise some discretion.

In reply to his Honour, the defendant said he could not name a single customer to whom he had said that he had only bought the shoeing business, and that Mr. Fearnley had the veterinary practice in charge. He denied that he had made overtures to have the business transferred, and said the plaintiff appealed to him three or four times. Mr. Thompson contended that the case had not been established, but that if there was any case proved the damages asked were excessive. Mr. Middleton stated that the plaintiff was entitled under the agreement to the defendant's recommendation and all the benefit accruing. There had been no benefit, however, and it had been shown that the defendant had not recommended in any instance. His Honour observed that the defendant was only bound to recommend the plaintiff (so loosely was the agreement worded) to such customers as required the services of a veterinary surgeon. He decided upon reserving his judgment until Wednesday.

At the next meeting of the Court the Judge delivered his verdict. A contract had been entered into between the parties, according to the terms of which Pattison was bound to recommend his customers to employ the plaintiff whenever they required the services of a veterinary surgeon. On behalf of the plaintiff two instances were cited where the defendant had not only neglected to carry out this undertaking, but had himself attempted to doctor the horses brought to his smithy. His Honour declared that he found the greatest difficulty in assigning any damages on such a vague, loose, and uncertain covenant as this was. Plaintiff had failed to instance a single case in which the defendant had neglected to recommend him where the services of a veterinary surgeon were asked for, and the treatment by the latter of two cases, in which the services of a veterinary surgeon were required, could only represent, at the most, a few shillings. But his Honour held that it was *perfectly competent for the defendant to carry on the business of a veterinary surgeon*, there being no restriction on the face of the covenant to prevent him. There was no evidence to support the plaintiff's statement that if Pattison had recommended him to his customers he would have made so much per week, and he therefore gave judgment for the defendant. Costs were applied for, but refused.

ARMY APPOINTMENTS.

War Office.

Veterinary Department.—The commissions granted to Staff Veterinary Surgeons R. J. G. Hurford, W. Johnson, and J. Collins, should be for general service, and not merely for service in India, as previously stated.—*London Gazette, Jan.* 18.

OBITUARY.

Information of the death of the following members of the profession have been received, viz.: Mr. Edwin Mulliner, Wrexham, Denbighshire. His diploma bears date April 30, 1859. Mr. Richard Brenning, Waterloo, Liverpool. His diploma dated April, 1842.

ERRATA IN NO. 505.

Page 26, line 44, *for* "during nine days in March," *read* "during the nine days' march."

Page 27, line 45, *for* "a cholera," *read* "as cholera."

The word "chumars," which occurs in page 19, line 36, signifies natives of a low caste, who readily partake of diseased flesh.

THE

VETERINARIAN.

VOL. XLIII. No. 507. MARCH, 1870. Fourth Series. No. 183.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from p.* 14.)

Anatomy of the Horse's Foot.—To facilitate the description of the horse's foot, it has been very properly divided into two orders of parts: the *internal, vital,* or *organized* structures, and the *external, insensible,* or *horny* portions. Though mutually dependent one upon the other during the life of the animal, these parts can only be satisfactorily examined when separated after death.

The *internal* structures consist of bones, cartilages, ligaments, and tendons, with a vascular and nervous apparatus, as well as a special provision for secreting the external parts. The *external* are composed of horny matter, being in fact the hoof, divided, as it is naturally and descriptively, into "crust" or "wall," "sole," "frog," and a particular appendage of the latter termed the "periople" or "coronary frog-band," which encircles the upper part of the hoof.

It is a matter for serious consideration which division of parts should first be described, it appearing, perhaps, most natural that an examination of the foot ought to commence with the external, and proceed afterwards to the internal structures, while the anatomist would consider this at variance with the method established by his science, and would begin with the internal structures—the bones and other textures which form the basis of the organ—leaving the

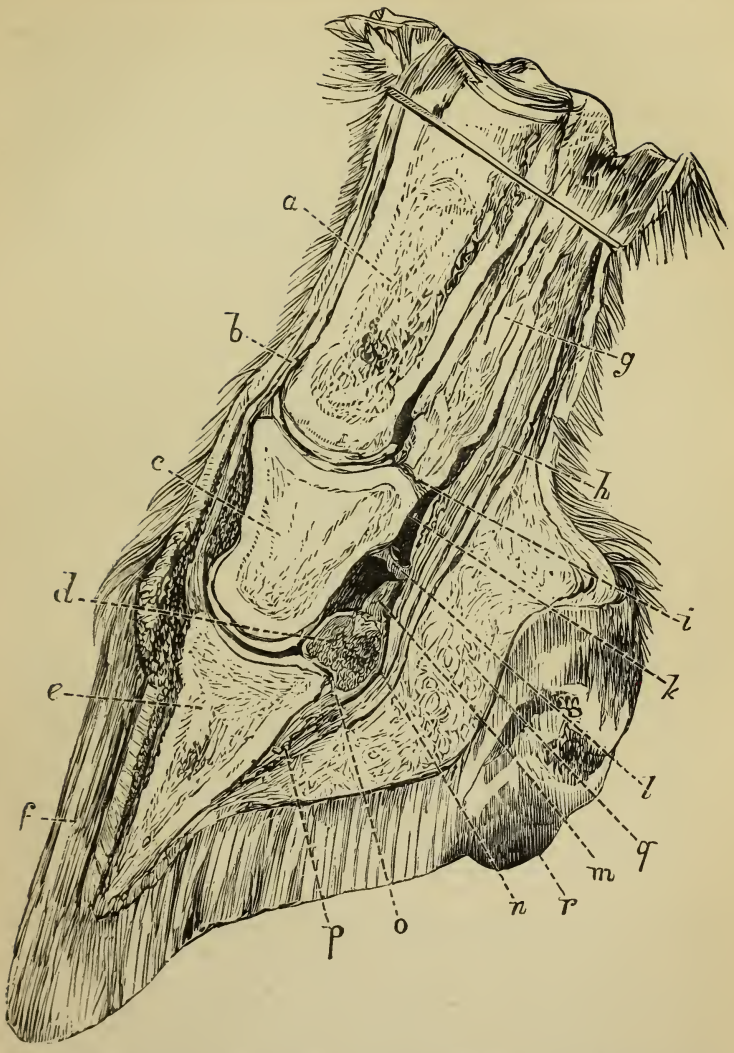
external envelope to be examined subsequently. We will adopt the latter course, as it is one with which we are best acquainted, and perhaps it offers the greatest facilities for making the description of the foot most readily understood.*

The Bones of the Horse's Foot.—The bones of the foot, looking at it as limited to the very extremity of the limb, are three in number, viz., the middle, small pastern bone, or second phalanx, which corresponds to the second digital phalanx of man's hand or foot; the pedal, distal, ungual bone or third phalanx, which may be compared to the terminal finger or toe bone, with its nail attached; and the navicular or inferior sesamoid bone, which has no counterpart in the human hand or foot.

Small Pastern Bone.—This bone (fig. 3, *c*) is also named the *second phalanx, os corona,* or *crown bone,* and is situated partly above and partly below the upper margin of the hoof, inclining in a more or less oblique direction, from above forwards, following the same angle of inclination as the bone above it—the large pastern bone (fig. 3, *a*). Its structure is exceedingly dense, and capable of withstanding a great amount of strain, its outer or cortical texture being a very thick and compact layer of bony matter, while its interior or cancellated structure is remarkable for its vascularity. In shape it is somewhat square and short; a cursory glance at it would at once demonstrate that it was specially adapted for strength and stability, fitted to sustain weight and support the attachment of powerful ligaments. At its upper extremity are two smooth, concave depressions or glenoid cavities, separated by a slight middle ridge, and covered with elastic cartilage to facilitate movement and diminish concussion. This extremity is adapted for articulation with the lower or convex extremity of the first phalanx. The inferior end of the bone is the reverse of the upper in being convex, and slightly depressed from before to behind in its middle, to articulate somewhat extensively with the pedal and navicular bones, through the medium of the articular cartilage covering their surfaces of contact. The upper part of its posterior surface shows a smooth fibro-cartilaginous patch, over which glides the large flexor tendon of the foot—the perforans or profundus. At each side of this portion, the

* As before remarked, I have refrained from entering at any considerable length into the details of descriptive anatomy when speaking of the structure and composition of the horse's foot. Those who are desirous of becoming thoroughly acquainted with these I would refer to the classical and unequalled monograph by M. H. Bouley—the 'Traité le l'Organisation du Pied du Cheval.' Paris, 1851.

Fig. 3.

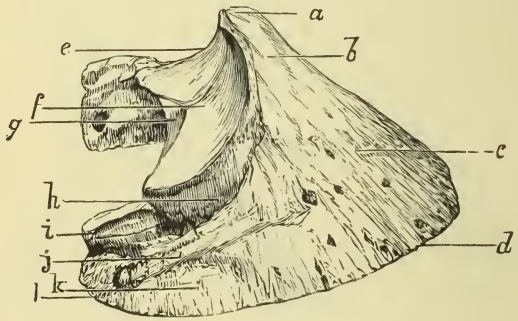


Vertical section of Horse's Foot. *a*. Large pastern. *b*. Extensor pedis. *c*. Small pastern. *d*. Navicular bone. *e*. Pedal bone. *f*. Wall of hoof. *g*. Superficial flexor, or perforatus tendon. *h*. Deep flexor, or perforans tendon. *i*. Insertion of one of the branches of the perforatus tendon into the side of the second phalanx. *k*. Gliding surface on the posterior face of the second phalanx. *l*. Elastic transverse or coronary suspensory ligament. *m*. Superior ligament of the navicular bone—a continuation of the former. *n*. Synovial capsule of the navicular bone and flexor tendon. *o*. Inferior or interosseous ligament. *p*. Insertion of the deep flexor into the pedal bone. *q*. Plantar cushion. *r*. Horny frog.

branches of the perforatus or superficial flexor tendon of the foot are inserted. Laterally, the bone is roughened and covered with eminences or depression for the insertion of powerful retaining ligaments. On this bone the whole weight of the body is thrown from above and transmitted to the bone or bones below.

The Pedal Bone.—The *third phalanx, pedal bone, coffin bone,* or *os pedis* of the English, *os du pied* of the French,

FIG. 1.



Pedal bone. *a.* Pyramidal eminence or process. *b.* Imprint at its base for the insertion of the extensor tendon of the foot. *c.* Anterior surface, roughened for the attachment of the laminal tissue, and pierced with vascular openings. *d.* Inferior margin or border of the bone. *e.* Superior margin or border. *f.* Surface for articulation with the small pastern bone or second phalanx. *g.* Surface for articulation with the anterior face of navicular bone. *h.* Depression for the attachment of the anterior lateral ligament. *i.* Basilar process. *j.* Preplantar fissure. *k.* Patilobe eminence or process. *l.* Retrossal process.

hufbein of the Germans, and *ungual phalanx* of the comparative anatomist (fig. 4) is, in an anatomical and physiological point of view, and by reason of its situation, its functions, and its relations, in health as well as in disease, a most interesting portion of the horse's foot to study, and affords ample compensation for the time it requires to gain an intimate knowledge of its character.

Forming the nucleus or core, as it were, on which the hoof is moulded, and occupying about three fourths of the cavity of that envelope, in its external configuration it bears a good deal of resemblance to the horny covering itself,—being more or less a segment of a cone, irregularly and obliquely truncated from before to behind. By its form, structure, and relations, it is admirably designed to assist in carrying on

uninterruptedly the circulatory and nutritive functions of the organ, even when it is subjected to great pressure and danger of injury from concussion against the ground, and in powerfully co-operating to avert shock to the whole limb by evenly distributing the weight which is suddenly, and oftentimes even violently, thrown upon it; while it is, above all, beautifully adapted to facilitate long-continued speed, and, with its appendages, that which is most of all necessary in an organ from which so much is required—elasticity.

In the horse of six years old, with a healthy well-formed foot —one which has not been tampered with by the unskilful farrier, or which has not been subjected to the gross mismanagement with which we are so familiar—we find the most favorable subject for examination. In such a foot the lower surface of the os pedis is seen to be of a crescent shape (fig. 5), the convexity being directed forwards, and the concavity towards the posterior part of the organ. Springing upwards from the convex border, and receding at an angle of from 50° to 60° in front, we have the *face* or largest surface of this bone, and that to which it mainly owes its shape. This antero-lateral face corresponds to the inner surface of the wall or crust of the hoof, preserving the same degree of obliquity as it does in the healthy foot; it rises boldly until it culminates in a triangular peak immediately in front (the *pyramidal eminence*, fig. 4, *a*), into the base of which is implanted the extensor tendon of the foot. From this eminence the upper border of the bone dips somewhat suddenly on each side, and, gradually declining, proceeds backwards to the two branches, wings, or horns of the crescent.

Looking closely into the structure of this wide surface, there will be observed a diversity in the arrangement of its plates or fibres—if we may use such a term when speaking of a bone—which exhibits design and adaptation to an eminent degree. These fibres appear to grow lengthways (from above downwards), in order to confer strength and resistance, and are, in the front and upper portions, closely bound together to form a compact exterior, which is slightly furrowed and perforated by grooves and minute openings for the reception and passage of blood-vessels that issue from the interior of the bone, or distribute themselves in the most wonderful manner over its face. Nearer the lower margin of the os pedis these fibres open out, apparently with the object of gaining a wider superficies without adding to the weight of the bone, until, on reaching that border, they become so widely separated and thin, yet so interwoven one

with another, that the substance of this portion looks quite spongy. This expansion of the bony tissue is carried to its greatest extent towards the wings, where the bone becomes light and porous like a piece of pumice-stone, and there forms two irregularly-shaped scaly surfaces, or nodes, full of small cavities, and which have been termed the *patilobe eminences* (fig. 4, *k*), though they are usually but little elevated above the adjoining level. The whole surface is channelled and pierced in a somewhat irregular manner for the transmission of blood-vessels; while its roughness admirably disposes it for the attachment of important textures, which will be described hereafter.

If we now look at the sole or plantar surface of the bone, we will find something analogous in structure. Sufficiently concave to form a good arch, on which the horny sole is moulded, its thickest, densest, and most unyielding part is in the centre—the keystone of the arch, and the most concave portion, which has to withstand the severest tests imposed, perhaps, upon any part of the limb. From this sustaining disposition of the bone-tissue at this spot, and which occupies more than one half of the plantar face, the laminated texture begins gradually to open out in diverging lines, throwing communicating fibres across to each other as they radiate from the centre, until, on reaching the circumference, they are found to bear the same relation with regard to porosity and lightness which the front fibres do. Here they all meet in a thin border, the anterior convex or lower edge (fig. 4, *d*), which is generally dentated or slightly notched, though sometimes it is tolerably even; in this way, and by reason of their direction and mode of communication, they strengthen each other. Besides supporting the weight, the surface at its densest part has to sustain the insertion and traction of the large flexor tendon of the limb, one of the strongest in the body, as well as afford a bed for the horny sole. It may be observed, however, that the sole of the bone altogether is much more extensively enveloped in a close covering of osseous tissue than the anterior surface.

Thus is a given quantity of bone material put to the greatest use in securing strength where most needed; being sparingly, yet most judiciously expanded into a wide ample surface, it gives the necessary superficies with diminution of weight; and, in addition, being disposed in a particular manner, and pierced by judiciously arranged communicating cells, it enables the whole to resist the downward pressure without danger to the nutrient vessels sheltered in its interior. Such a disposition also tends to diminish that tendency to

jarring which must be greater in a solid than any other kind of foot.

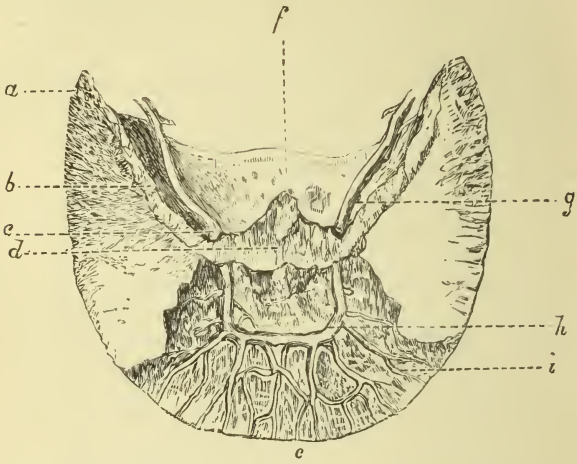
This admirable arrangement of its minute structure in layers of varying density, distributed according to the necessities of the case, is most conspicuous in the centre and anterior portions of the hoof-bone, the strain being most considerable at these parts, the texture is closest; while towards the wings or posterior portions, which are behind the axis of support, it is light, loose, and expanded, and better qualified to assist in lessening concussion when the foot meets the ground than in sustaining weight.

Behind the pyramidal process which surmounts the front surface is a large, polished, slightly hollow space (fig. 4, *f*) for articulation with the lower end of the small pastern, and a portion of the navicular bones (fig. 4, *g*), and on each side of this, passing backwards, is a flattened projection of some importance, conveniently designated the "*basilar process*" or tubercle (fig. 4 *i*), because it affords a basis for the support and attachment of an elastic cartilage situated here; while at the lower side is a rather deep depression (fig. 4 *h*), for the lodgment and fixation of one of the strong lateral ligaments that binds the bone in such a solid manner to the one above it. Below and behind these lie the oftentimes variable and irregularly shaped wings of the bone, the terminations of which have been termed its appendices or *retrossal processes* (fig. 4 *l*). Above the inner or concave border of the crescent, and immediately below the articulating surface, is a space for the lodgment of the navicular bone (fig. 5, *f*), and around the anterior edge of this excavation is seen a roughened surface, the *semilunar ridge* (fig. 5, *d*), for the insertion of the powerful fibres of the large tendon that flexes the foot and assists in maintaining the angle of the pastern, while the animal is in a standing attitude.

Exactly in the middle of the lower convex border—at the toe or front of the os pedis—there is often, though not invariably, a small indentation (fig. 5, *e*), which looks as if the bone had been notched, and sometimes a shallow narrow groove or faint depression extends from this up towards the pyramidal process. The extent of the notch when present varies in depth and width not only in animals of the same age, but in those of different ages, being in many young horses scarcely perceptible, and in others rather conspicuous, and nearly always increasing apparently as they advance in years. This indentation has been thought to mark the transition from didactylous to monodactylous animals, but I cannot help thinking that the manner of applying the toe-clip of the shoe

to the hoof in many cases is sufficient to hasten the development of this seeming defect, or even to produce it. At the

FIG. 5.



Lower or Plantar Surface of the Pedal Bone. *a*. Retrossal process, or heel. *b*. Plantar fissure. *c*. Plantar foramen. *d*. Imprint for the insertion of the deep flexor tendon. *e*. Toe of the bone. *f*. Space between the wings of the pedal bone for the lodgment of the navicular bone and the soft structures at the posterior part of the foot. *g*. Plantar fissure with blood-vessel entering the foramen. *h*. The sole of the bone removed to show the semilunar sinus, and converging and diverging canals through which arteries pass to form the circumflex artery around the lower margin of the foot.

same time, I am quite ready to admit that it sometimes appears as a natural feature in the pedal bone of a foot that had never been submitted to the farrier's treatment; quite recently I have examined these bones in a colt, and they were deeply indented at the toe.

Nearly the whole anterior and a portion of the lateral surface of the bone is pierced at various intervals by openings of different sizes for the passage of blood-vessels varying in calibre, from the most delicate hair-like tube to the vein nearly as thick as a goose quill; and on the lateral surface, towards the wings, grooves, channels, and recesses, will be observed excavated out of the hard bone, like some of those fantastic caves and passages which the waves of the sea have been forming during long ages in rocks exposed to their ceaseless power. It is worthy of remark that the anterior surface of the bone is most extensively pierced by those canals

which lead directly into its interior, and that there they are largest, some of the most capacious being situated immediately in front of the "scaly" or "patilobe eminence." In laminitis we know that the anterior portion of the foot suffers most severely, and that the subsequent pathological changes, resulting in deformity of the wall of the hoof and the sole, are principally confined to this portion. I have constantly remarked that these changes rarely extend further back than the termination of these foramina and the commencement of the patilobe eminences. The reason for this may become apparent hereafter.

So numerous are these conduits around the lower thin edge of the bone, that it not unfrequently looks notched and broken, and in other places appears like a veritable rabbit-warren in miniature, for smooth-surfaced holes are burrowed out everywhere, and generally in an oblique direction, or run along the steep surface for some distance. One of these spaces passes along in a horizontal manner on each side, separating the patilobe eminence and retrossal process below from the basilar process and lateral depression above, and is so marked a feature in this aspect of the bone as to have received the name of *preplantar fissure* (fig. 4, *j*). So noticeable and peculiar is this series of external perforations, that an anatomist who happened to be unacquainted with the organization of the horse's foot would at once pronounce it to be an organ endowed with the highest degree of vascularity, from a mere casual examination of the outside of this artful circulatory contrivance. Wonderful, however, as may appear the arrangement of channels and perforations on the exterior of the bone, it is even more so if we follow these up to their sources in the interior. By clipping and rasping away the enveloping osseous texture,* we perceive that all the infinitely minute and comparatively large tunnels, which appear to ramify everywhere in the most perplexing manner, converge towards the centre, to form what is called a sinus, or cavity of a semilunar shape (fig. 5, *h*), lying in a horizontal direction, and, like the smaller spaces, having cylindrical walls which are composed of the densest and strongest bone. This beautiful and complete system of viaducts, which affords ingress and egress to countless vessels, and serves to a great

* I need scarcely say that the readiest way to expose these internal vascular channels is to soften the bone by maceration in diluted hydrochloric acid, when, owing to the earthy salts having been removed, the organic matter is easily cut and the canals displayed. When it is desired to keep the vessels intact, then, of course, this procedure is inadmissible, and the chisel must be resorted to.

extent as a diverticulum to the mass of blood sent to or returning from the foot, results from the confluence of all the canals proceeding from both surfaces, often uniting many times in their converging course, until they reach the grand curvature of the sinus, which they all enter by a limited number of openings. The sinus itself continues to bend backwards, and finally gains the exterior of the bone by two orifices—the *plantar foramina*—some distance apart, situated beneath the large articulating surface towards the posterior portion of the arch of the sole, within the wings of the os pedis (fig. 5, *c*). In this locality, as before remarked, the dense bony tissue is most abundant and most skilfully disposed to preserve intact this important cavity or sinus: sending out perpendicular prolongations, like so many resisting pillars, to give additional strength to the whole foundation, and fortifying it against the superimposed weight, which is ever tending to crush the articular or upper, and lower or ground, surfaces together. Not unfrequently we find a more complicated and wonderful arrangement of these canals than is represented in figure 5. Some show a very curious and intricate disposition, indicated by M. H. Bouley, in which there is a secondary sinus, with very numerous radiating branches that frequently anastomose with each other before opening into the circumflex artery.

If we remove the anterior wall of the os pedis from below the pyramidal eminence, the existence of this series of perpendicular or descending canals will be again revealed, as they communicate with the semilunar sinus.

As I have already said, to study the conformation and structure of the chief bone of the foot, one of a comparatively early age, say from four to six years old, should be obtained; as generally with age, no less than through the effects of continued shoeing, labour, mismanagement, and disease, it becomes considerably and prejudicially altered. The inferior margin, or what is frequently termed the "bearing surface," becomes rounded, the toe portion especially is sometimes so much absorbed as to appear turned upwards, and the two wings, instead of standing on the same plane, also bend upwards or even downwards, while morbid depositions of osseous matter are frequently observed on various parts of the surface.

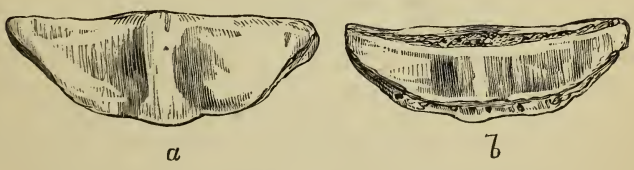
In a healthy well-formed bone the whole of the lower or convex margin, from toe to heels rests pretty evenly on the same level, and the toe does not bend upwards to a greater or less extent, as is sometimes represented in drawings of this ray. The basilar process also submits to various altera-

tions in form and structure, as does likewise the front surface of the bone, which is disposed to become greatly modified with age and the influence of external causes.

In youth, the wings, or, as they have been termed, the lateral angles of the pedal bone, are short, thick, and rounded, with the basilar process extending much beyond the retrossal process beneath it; indeed, the latter is scarcely developed, and the preplantar fissure separating these two processes is in reality nothing but a simple groove throughout its course, whereas in the representation we have given of the pedal bone (fig. 4, *f*), it has become converted into a foramen at its posterior part. The alteration and development the wings of the bone gradually undergo would appear to be due, for the most part, to the progressive changes that take place in the texture of the complementary or lateral cartilages immediately surrounding them—changes which result in the more or less complete ossification of these bodies.

The pedal bone of the hind foot only differs from that of the fore foot, which we have been describing, in its being generally smaller, less inclined laterally, and more particularly on its inner face; the sole is more concave; the narrowness and length of the bone, especially towards the toe, are very noticeable; while its tissue is not so compact, the fore limb being the weight-sustaining column.

FIG. 6.



Navicular Bone. *a*. Inferior face with its transverse ridge. *b*. Supero-anterior face for articulation with the small pastern bone, showing on each side vascular canals for the passage of blood-vessels.

The Navicular Bone (fig. 3, *d*; 6, *a*, *b*).—The navicular bone is so named from its resemblance to a small boat (*navicula*) when laid on its lower border. It has also been designated the "small sesamoid" from its supposed likeness to a sesamum seed; "nut bone" because of its being buried deeply within the foot; and "shuttle bone," as it not only looked like a weaver's shuttle, but lay across the axis of the limb.

It derives very much of its importance from the part it

takes in locomotion, which is a somewhat peculiar and prominent one; and also because of its being so very frequently involved in that most formidable of equine diseases—navicularthritis—the bane of horse-flesh, as it has been euphemistically designated. It is a somewhat slender flat bone, thicker at its lower than its upper edge, bulging considerably in the middle, where it shows a transverse ridge on each face, and becoming thinner and narrower towards the ends. Its position is transverse behind the joint of the foot, between the basilar processes, and in contact with the pedal and small pastern bones. Resting on, or rather articulating with, a portion of the posterior edge of the wide articulatory surface of the former bone, it very materially increases that surface by adding to it the width of its own upper face. This inclines at an angle closely approaching that of the front aspect of the foot-bone, and is so disposed as to fit in a very accurate manner into the wide posterior joint-surface of the coronary bone; thus forming a capacious articular space affording more support for the last-named bone, and a wider range for its hinge-like movements. The transverse elevation in the middle of this face, with the smooth depressions on each side, correspond to those on the upper surface of the os pedis, and these adapting themselves to the lateral convexities and central depression of the coronary bone, form, when covered with a layer of dense cartilage, and bound solidly together by powerful ligaments, a secure joint possessed of extensive backward and forward motion.

The borders of the bone offer nothing worthy of particular notice in this brief sketch; they give insertion to resisting ligamentous bands which bind it firmly to the bones in front, and are pierced by many small-sized apertures for the passage of vessels; the two ends or wings of the bone are peaked upwards into somewhat rounded points that are buried in a thick fibrous mass which attaches them laterally to the pedal bone. We will notice the peculiarities of this fibrous structure hereafter.

That portion of the bone which lies upon the os pedis (fig. 6, *b*) has, in early life, two distinct, though very small surfaces of contact, which in later years become united, leaving no trace of their having once been separate.

In structure this bone is somewhat compact and strong, being composed of hard, closely knit, osseous tissue, enclosing a nucleus of looser or spongy texture which lightens and gives bulk to the bone, but does not by any means impair its desired resistance, while it affords space for the lodgment of blood-vessels which make the interior of this bone as vascular

as bones of this class usually are. So that there is nothing at all remarkable in the arrangement of the bony tissue of this portion of the foot.

In the hind foot the navicular bone is shorter and less bulky.

The posterior face of the navicular bone is that which is so often the seat of disease. Standing at an angle perhaps a little more acute than that of the front surface, it exceeds it in length and width, and, like it, has a prominent transverse ridge nearly in its centre, with a slight and irregularly undulating depression on each side; that portion towards the outside of the ridge, and consequently corresponding to the outside of the foot, being the largest side. Over the whole of this surface the wide expansion of the flexor tendon of the foot glides vertically, to a limited extent, during the various movements of the lower half of the limb. This face of the bone is covered by a particular membrane, whose structure and special characteristics it is necessary to recognise, if for no other than pathological reasons. And these reasons are all the more urgent, as it would appear that in discussing the pathology of naviculartbritis, the nature of the tissue covering the face of the bone has been sometimes most unaccountably overlooked or mistaken.

For instance, it has been stated that this tissue is *articular cartilage*, and the pathological changes incidental to that substance, with the various hypotheses as to the causes which induce these changes, have been brought to bear in explaining the several phases of disease on the lower face of this bone. Theories have been promulgated, in the belief that the disease commenced in the spongy texture of the bone, and if not successfully combated when localised there, that it extended to the compact tissue, and ultimately attacked the contiguous face of the supposed articular cartilage.

Now, if the other two faces of the bone—those articulating with the second and third phalanges—were always or ever involved in this often-inflammatory and not unfrequently ulcerative disease, the supposition would, in all probability, be correct, as they are both covered by a layer of that peculiar substance which is interposed between the surfaces of bones forming a diarthrodial joint, and which is appropriately designated *articular cartilage*.

But this is not the case. I have never heard of or witnessed an instance in which these surfaces were affected by this particular form of disease, though they could scarcely fail to be implicated did the malady commence in the interior of the bone, as conjectured by some; indeed destruc-

tion of the articular cartilage on these surfaces would be merely the sequel to disease in the spongy tissue. A casual glance at the three surfaces of the bone will at once show that the inferior face—that which is in apposition to the inner surface of the deep flexor tendon differs from the others in *not* being covered with articular cartilage, but with a tissue which is somewhat widely different from that substance. The overlooking this fact has, doubtless, led to the theory that the affection which we term "naviculartbritis" commenced its ravages in the spongy tissue, extending them only and always to one side of the compact tissue and the covering external to it.

The inferior face of the navicular bone is covered by a *membrane*,* which, so far as I am capable of judging, differs but little, if in anything, from those membranes which are usually classed by the name of *stratified fibrous cartilages*, and cover bony prominences or grooves, over or through which tendons glide. We have an excellent example immediately above the navicular bone, on the posterior face of the second phalanx, and better still, perhaps, on the posterior surfaces of the sesamoid bones of the fetlock. In these fibro-cartilaginous membranes the diversely arranged fasciculi of white fibrous tissue can be distinctly perceived by the naked eye beneath the synovial membrane covering them; and their appearance is widely different from that presented by articular cartilage, which is a homogeneous, semi-transparent and elastic substance, having no synovial membrane on its face. Examined microscopically, they are found to be still more dissimilar; in the first there is found to be but little, if any, hyaline matrix.

The covering on the navicular bone is chiefly remarkable from its constituent fasciculi being derived entirely from the ligaments surrounding it, and which attach it to the other bones. The glistening white fibres from these are seen to pass inwards in bundles, ramifying over the face of the bone in a somewhat irregular manner, and becoming fewer in number towards the centre where the friction is greatest—another feature which distinguishes this membrane from articular cartilage, which is generally thickest where most pressure has to be sustained.

Add to this that a synovial capsule lines the face of the

* Professor Bouley does not describe this membrane or its structure. He merely remarks that this face of the bone "est revêtu d'une épaisse membrane fibreuse, analogue, par sa disposition, aux cartilages diarthrodiaux, mais différente par sa texture, son organisation et ses propriétés."—'Traite du Pied du Cheval,' p. 37.

tendon and the surface of the navicular bone, to facilitate their movements on each other; that this membrane is nearly, if not quite, as vascular and sensitive to injury as it is elsewhere; and we have not far to seek for the true pathology of navicular-thritis. Disease, in some cases, may be confined for a long time to the synovial, or rather the fibrous, membrane covering this face of the bone, without the slightest change being perceptible in the spongy texture; indeed, so dense is the compact tissue that, even in advanced stages of the malady, it yields but slowly to the disintegrating process, and thus protects the more vascular but less resisting cancellated structure, until it is itself destroyed. The rough ossific deposit we sometimes see on the surface of the navicular bone is due to the fibro-cartilaginous membrane.*

With regard to the causes that induce this disease, it is not my intention to speak in this place; it may be sufficient to state that, as an army veterinary surgeon, I have had opportunities for assuring myself that it can be produced in a moment in horses that have never worked onhard roads, but have been engaged in their first field days, and just dismissed the riding school, where they were trained on soft tan. Quite recently I saw it produced in a high-stepping mare during two days' severe exertion without preparation.

What is termed *concussion* has little, if anything, to do with its production, as the navicular bone may be said to be better protected, or rather further removed, from this influence than any other bone in the fore-limb, perhaps excepting the supercarpal and sesamoid bones. If concussion caused any disease like this, far more likely would it affect the bones directly exposed, such as the pedal, coronary, or other bones immediately above these.

The function of the navicular bone will be alluded to when we come to speak of the physiology of the horse's foot; I have made this digression into its pathology more for the sake of showing how important a correct knowledge of anatomy is to the practitioner and pathologist than to venture to throw any new light upon a disease whose nature,

* Less than twelve months ago I was obliged to recommend a mare to be destroyed, in consequence of incurable lameness, caused by disease of the long flexor muscle of the forearm, which became suddenly sprained on the picket-line some nine months previously. On examination, I found the bi-cipital grooves of the humerus, as well as the face of the fibro-cartilaginous tendon of the muscle that plays in these grooves, showing precisely the same morbid anatomy with which we are so familiar in naviculartbritis, even to the most minute details. As is well known, this part of the humerus is, in its anatomical features, analogous to the navicular bone.

morbid phenomenon, and causes should by this time be pretty well known.

In speaking of the articulations of the foot, it may be necessary to refer in greater detail to the anatomy of this part and its bearings on the production of disease.

ANEURISM OF THE POSTERIOR AORTA OF A HORSE.

By Messrs. Gowing & Son, M.R.C.V.S., Stucley House, Camden Town.

On the 29th of January last we were requested to see a brown gelding, age 27 years, the property of Messrs. Simpson and Weatherstone, corndealers. The man stated, at the time of our visit, that the horse had been voiding high-coloured urine, about a pint at the time. This condition of the urine had been existing about ten days.

Upon examining the horse the visible mucous membranes were found to be normal in aspect; the pulse at the submaxillary artery was about 40 in number, and normal in its character. The horse was feeding tolerably well, and there was no indication of pain.

The man was instructed to collect some of the urine and forward it to us; this was done, and some of the fluid, on being examined under the microscope, was found to contain blood-discs in considerable number, and also some crystals, both the circular and dumb-bell forms, of the carbonate of lime.

We now requested the owners to send the horse to us for a further examination, and he was accordingly sent to our infirmary on the 2nd inst. The rectum was explored, and the bladder was found to be much distended. Pressure was made by the hand upon the viscus without any effort to urinate resulting. A catheter was then used, and the contents of the bladder drawn off. The fluid thus obtained was of a dark red colour, mingled with a quantity of mucus. Some of the contents was received into a vessel for further tests. The rectum was explored again, but no calculus could be detected in the bladder.

Our opinion was now given to the proprietors that there might be some structural disease of the kidneys, or that the hæmorrhage might arise from rupture of the capil-

lary vessels of the mucous membrane of the bladder, and the horse being aged, it was recommended that he should be destroyed.

On the 12th instant he was destroyed, and a *post-mortem* examination made; and when the slaughterman removed the intestines we perceived an enlarged condition of the posterior aorta, a little behind the anterior mesenteric artery. The kidneys were detached, and upon examination were found to be normal. The bladder was distended with a large quantity of fluid. A ligature was passed round its neck, and it was carefully removed. Upon cutting into it there was found a giving way of some of the capillary vessels of the mucous lining membrane, causing slight hæmorrhage, which was indicated by numerous petechiæ. This, no doubt, was the cause of the existence of blood in the urine.

The aneurismal sac was eleven inches in circumference at the largest part; the walls of the cavity were attenuated, but the loss of thickness was in some degree compensated by calcareous deposit, which must have materially added to the resistent power of the structure. There were no traces of the parasites (strongyles) which are so commonly found in connection with dilatation of arterial trunks in the lower animals, the horse and ass especially; it is, however, quite probable that they were present at the commencement of the disease.

OBSERVATIONS ON MR. OVERED'S CASE OF PARTIAL OCCLUSION OF THE TRACHEA.

By Alfred Owles, M.R.C.V.S., 6th Dragoons.

The case of partial occlusion of the trachea which was recorded in your Journal for the past month by Mr. Overed appears to possess some points of special interest with reference to the amount of dyspnœa which was present at times, and, as reported, the almost perfect freedom from difficulty in the animal's breathing at other times.

Is it assumed that the mechanical obstruction arising from the deposit in the trachea, which lessened its calibre, was the direct cause of the extreme difficulty in breathing. If so, does such an hypothesis account for the fact that at other times there was little, if any, difficulty of breathing present, although the mechanical obstruction arising from the deposit

must have remained as great during the tranquil stage as it was during the paroxysms which threatened asphyxia?

I think that no one will deny that there must have been something in addition to the state of the trachea to produce so much change in the horse's breathing.

I am induced to make these remarks, because just now I have a patient which ten days ago came to the infirmary, having been reported to have fallen, on parade. When I saw the horse, the pulse and breathing were natural; he also ate mashes, &c., freely. Not to tire your readers with unnecessary details, I may state that the breathing continued tranquil till the animal was taken out for exercise next day, when spasm of the larynx immediately came on, and so severe were some of the subsequent attacks, that blood issued from the nostrils, the abdomen heaved, and the animal expressed in his countenance the extreme anxiety and agony endured for want of breath. I found that rubbing the throat gave relief, and that the attacks generally passed away in an hour or so. But as the symptoms became more serious, I performed the operation of tracheotomy, and the horse has had no recurrence of dyspnœa since, and is feeding and apparently doing well, proving the nature of the attack, but not the cause; that is to me in the region of conjecture at present. Perhaps if I had allowed the patient to die from asphyxia, I should have discovered a condition of the upper air-passages which, by reflex action of the nerves upon the muscles of the larynx, would account for the spasms of those muscles. I cannot help thinking that the urgent symptoms in Mr. Overed's case of partial occlusion of the trachea were induced by spasms of the larynx, consequent upon nervous excitement produced by the morbid condition of that tube.

FRACTURE OF THE TIBIA.

By "Quæsitor."

On Sunday afternoon, the 17th October last, I was sent for to an accident, and on arrival I found a bay carriage gelding, comfortably stabled in a loose place, but with his off hind leg lifted slightly off the ground, and evidently suffering great pain.

From the general appearance of the animal I immediately guessed what was the matter, viz. that the leg was broken, and subsequent inquiry and examination confirmed my view.

The owner's servant then told me, that on leading this horse

with another from a railway station, when about half a mile from his master's stables, the one he was riding kicked and struck the other, which fell and rolled over, but scrambled up almost directly. He then stood, as I then saw him, on three legs, and was consequently with difficulty got to his box.

On watching the animal I noticed the peculiar darting and rotatory motion usually met with in fracture of the extremities. I also heard once a distinct clicking sound, which, I have little doubt, was caused by muscular action on the edges of the broken bone. In manipulating the limb, on the inside of the thigh, half way between the hock and stifle, I found a small abrasion, about an inch in length, but not skin deep; it had probably been caused by the shoe of the horse which kicked him.

The bone at this part being but slightly covered, I was able, after very careful examination, to detect what felt like a slight ridge running down the length of the bone; this, together with the other symptoms, led me to the conclusion that I had a longitudinal fracture, with slight displacement of the tibia, to deal with.

The fibula I could not feel, and, considering that five hours had elapsed from the time of the accident to the time of my seeing the case, this is not surprising; but I imagine that it was not in any way injured.

The animal could not bear any weight on the limb, although he could draw it upwards towards the belly, when it was lifted during the necessary examination.

There was, comparatively speaking, very little swelling; but much, indeed almost constant, twitching of the muscles inside the thigh.

When the owner was told my opinion of the case he at once said that he would have the poor beast destroyed; but on my asking him to give the horse to me, as I should like to see what could be done in the way of treatment, he asked me to do so at his expense. This I considered very liberal, as I had previously explained that the horse would have to be kept in slings for at least two months, to ensure the quietude which was necessary to the uniting of the bone, no matter how well the patient might do; and that, supposing nothing like a false joint formed and the bone did unite, the leg might very likely be shortened, and thus cause the horse to limp in his gait, and render him useless for the work required of him.

Having had the horse removed in a van to the hospital, and put into slings in a large and airy box, I proceeded to apply a paste bandage to the limb, that is to say, from the fetlock to

the stifle, using in the process about three pounds of paste, two sheets of brown paper, a roll of fine tow, and about forty yards of flannel bandage. This done, he was ordered to have a powerful sedative, together with a strong purgative—the main object being to allay pain and produce nausea, as I thought that these things would probably help in keeping the animal from moving his leg so much as he otherwise would do, and thus give the bandage a chance of becoming hard or set without displacement. A man was also ordered to remain with him to attend to anything which might be necessary.

I should likewise mention that I examined the animal per rectum, but failed to discover any indication of injury to the pelvis.

At ten o'clock p.m. the pulse was 60, the body warm, and the breathing tranquil. He had also eaten some warm mash.

The following morning at eight o'clock the pulse was 52, and the body still warm. A great deal of jerking of the limb was present, which, however, on account of the stiffness of the bandage, could only be raised about an inch or so.

The next day he did not appear to be in so much pain, and the spasmodic movement of the leg was less frequent.

27th October (ten days after the accident).—No apparent change. The bandage has unfortunately slipped or worked its way down about a couple of inches; but still the limb is so fixed that it can scarcely be moved.

The notes in my memorandum-book continue as follows:

4th November.—Pulse 35. Animal very restless.

12th.—Can bear all his weight, or rather so much of it as is not supported by the sling, on the affected leg for a second or two, while he shifts the position of the other. Attendant ordered to carefully watch that the slings do not chafe or irritate the skin.

27th.—A marked difference in the power of bearing weight on the leg.

4th December.—Can now bear all his weight on the broken leg, whilst he rests the opposite one. Much wasting of muscles of the off quarter.

9th.—Loosened the slings to see whether the horse could support himself if unassisted. He did so quite well for a couple of hours, resting his legs alternately. The slings were then tightened again.

10th.—Finding the bandage in front of the hock discoloured, I removed the whole of it, and found a wound in the bend of the hock discharging rather offensive matter.

11th.—Considerable swelling of hock and leg, but animal

apparently free from acute pain. The slings to be slackened for two or three hours daily.

14th.—Less swelling. Slings to be removed entirely for two hours.

15th.—Wound in front of hock healed; leg less swollen.

27th.—Was led out of box to-day for the first time, and appeared to walk firm and well.

6th January.—No perceptible lameness in his walk, but slightly lame when trotted. Exostosis on inside of thigh not so large as might be expected. Discharged.

The owner was so pleased with the case that soon after the horse reached his stables he, somewhat prematurely, put him in harness, and, with the exception of a little shyness, found him go remarkably well.

It will be seen that only five and twenty days after the injury was received the patient could bear a certain amount of his weight on the leg, and that only fifty days elapsed before he could use it quite well.

I am quite prepared to find that many who may read this case will be sceptical as to whether the leg was broken at all, and inasmuch as, as far as I know, that this is the first case of the kind on record, their doubts will not be unreasonable, as we have certainly very limited data to go by.

I believe that a human patient, similarly afflicted, is seldom allowed to move, even with the aid of crutches, much under two months; but here we have an animal actually taking strong exercise within that time.

The result shows what nature will or can do when judiciously assisted by art, and it may, perhaps, be the means of saving more than one animal which would otherwise have been destroyed.

ACUTE INFLAMMATION OF THE HEART.

By Alfred Broad, M.R.C.V.S., Paddington.

On the 9th of August last a well-bred bay mare, five years old, belonging to Messrs. Gough and Co., St. John's Wood, was brought to the infirmary, presenting the following symptoms:—She was very weak, and reeled in walking, so much so that she nearly fell several times on the road. The pulsations were 80 in the minute, and so weak as to be scarcely distinguishable; the heart's action could not be felt; the

extremities were cold, and the visible mucous membranes slightly congested; there was also a very significant stare of the countenance. On auscultating the chest the heart was found to be beating very feebly.

Indisposition was first observed two days previously to her admission, by her owner, who administered some febrifuge medicine, thinking the case to be merely a cold.

She was placed in a large loose box. Febrifuge medicine was given with Chloric Æther ʒvj, the legs were bandaged, and the body clothed; also an enema was given.

3 p.m.—The symptoms had much increased in intensity; the animal evinced great uneasiness, and had not lain down; the body was covered with a profuse perspiration; the extremities were still cold, as was also the mouth; the pulse was quite indistinct. Gave—

Chloric. Æther., ʒj;
Tinct. Opii, ʒss;
Liquor. Ammoniæ Acetatis, ʒiv;

and applied mustard over the region of the heart.

7 p.m.—The symptoms were of the most unfavorable description. The mare was continually walking round the box, though not turning to either side especially, and was evidently in great pain. Pulse imperceptible. Medicine was again given, although the case now appeared hopeless; in fact, little hope was given of her recovery from her first admission. She continued to grow weaker till about nine o'clock, when she dropped exhausted, and died without a struggle.

Post-mortem.—The abdominal viscera were healthy, excepting that along the whole course of the large intestines, and closely attached to them, was a very considerable deposit of fibrinous substance, in places as thick as a person's hand. The lungs were healthy.

The right auricle of the heart was excessively inflamed, both on its outer and inner surfaces, and also throughout its substance, and was much softened; the inflammation also extended into the right ventricle, the endocardium of which was much discoloured, even showing a greenish hue in places. The left ventricle was much inflamed throughout its walls, which were much softened, thus accounting, no doubt, at the stage of the disease in which the animal was brought to the infirmary, for the great want of force in its pulsations; its lining membrane also was considerably inflamed and discoloured.

FOUR CASES OF RABIES IN CATTLE.

By William Worthington, M.R.C.V.S., Wigan, Lancashire.

Perhaps the following history of four cases of rabies which came under my notice in November and December last, although they may add nothing to our present knowledge of the pathology of this dreaded and mysterious disease, may not be unworthy of record in the pages of the *Veterinarian*.

On Sunday the 28th of November, 1869, I was requested to visit a heifer belonging to a farmer residing about seven miles from here. I was desired to see the animal, not because the owner thought my services would be of much avail, as he considered the case hopeless, but, from the peculiar and unusual character of the symptoms, he feared it might be the outbreak of some contagious disease, and was anxious to know whether such was really the case or not.

On inquiring the history of the case I learned the following particulars:—The heifer, which was a very small one, two years old and in calf, had been noticed to be dull and to separate from the rest of the herd in the field on the preceding Thursday. Not much regard, however, was paid to this, but on the following day the owner's attention was again drawn to her by observing her face and horns covered with soil, and she was now seen to be labouring under great excitement, having a wild startled look, bellowing frequently, and occasionally charging furiously at her companions; a great change also was observable in the abdomen, which presented an extremely hollow, almost emaciated appearance, as if the animal had recently undergone a long fast. Thinking that she had probably cast her calf in some part of the field, and that her excitement was due to this cause, a vigilant search was made, but no trace of abortion having occurred could be discovered.

She was immediately taken up and placed in a loose box, and from this time until the owner came to request my attendance her excitement and restlessness had been almost continuous. She was ever on the alert, and would instantly charge at any one who entered the place. A large quantity of frothy saliva hung from the lips, and the bellowing was almost incessant. She had refused all food since the previous Thursday, but seemed to suffer great thirst, and when supplied

with gruel or water made eager attempts to drink, but was powerless to swallow.

Being unable to visit her that night, I supplied the owner with a strong dose of purgative medicine to be given immediately on his return, a powerful opiate to be given at frequent intervals, and a blister to apply behind the ears, and promised to visit her early the following day.

Suspecting the case might probably be one of rabies, I also particularly cautioned him to avoid smearing his hands with saliva in horning her.

On my arrival at the place next morning I found that the wild excitement from which the animal had hitherto suffered had almost completely subsided, and was now succeeded by comparative quietude and a state of extreme exhaustion. The eyes had a peculiar anxious but watchful look, the pulse was slow, small, and feeble, and the debility so great that it was with difficulty she could walk across the place, but though so greatly prostrated she still displayed an anxious desire to escape from confinement. The thirst, however, still continued undiminished, and on a bucket of gruel being offered to her in my presence she eagerly plunged in her nose and made repeated but vain efforts to drink, the liquid at each attempt returning by the nostrils.

She rapidly sank during the day, and died early next morning, but her restlessness only diminished in proportion with her fast failing strength and was observable to the last.

Throughout the disease there was little or no action of the bowels, and everything but fluids was persistently refused from the commencement.

The following Sunday morning I received a message requesting my attendance at another farm in the same neighbourhood, and an old friend and College companion (Mr. Thomas Harwood, M.R.C.V.S., of Liverpool), having just dropped over to spend a portion of the day with me, kindly accompanied me to see the case.

This animal, I was informed, was also an in-calf two-year old heifer, and had displayed such alarming symptoms of violence that it had been deemed advisable to fasten her securely the previous night. Before entering the shippon, the owner advised me to be cautious in approaching her, as any attempt to do so strangely excited her; and this preparatory caution proved not unnecessary, for we were almost deafened with the bellowing which greeted us on opening the door. Our entrance had evidently thrown her into a state of the wildest excitement, which, however, subsided after we had remained quietly watching her a few minutes; but

the least movement on our part, or even an attempt at conversation, instantly brought on a paroxysm of bellowing again. The eyelids were widely dilated, and the eyes bright and prominent, giving her an extremely wild startled expression; a quantity of frothy saliva adhered to the lips, and with head erect and ears pointed forward she stood keenly sensitive to everything around her.

In her struggle to liberate herself one of her horns had become fractured, the blood from which, having streamed over her face, increased considerably her wild unnatural appearance. There was no disturbance of the pulse, and both bowels and kidneys were acting naturally. From the beginning of her illness she had refused all food; but, unlike the former case, she had also displayed a similar indifference for fluids. Since the previous day the symptoms had greatly increased in intensity, the intervals of quietness being now of extremely short duration, and the bellowing could be distinctly heard at a distance of two or three miles.

Treatment, of course, was not adopted; and the owner being unwilling to keep her until the disease had run its course, she was destroyed a few hours after our visit, and I regret to say that in neither of these two cases had I an opportunity of making a *post-mortem*.

About three weeks after, whilst attending a case of rheumatic fever at the same place, I learnt the following additional information concerning her. The owner first discovered her to be amiss two days before I was sent for, his attention being attracted by her strange appearance and conduct in the field. In passing through his stock he noticed that she looked remarkably hollow, and instead of grazing along with the other cows stood with head erect, looking wildly towards various parts of the field, apparently watching intently some imaginary object. She would stand in this way until her companions had grazed some distance from her, when she would walk up amongst them and again resume her attitude of suspicious watchfulness. As yet she had manifested no desire to do mischief, and throughout the disease would permit any of her companions to approach her; but on the following day she made a fierce attack on some young calves, and became perfectly furious on seeing a dog which was kept at the farm for the purpose of driving the cattle to and from pasture, and towards which she had hitherto never displayed any symptom of animosity.

On Sunday, December 12th, a fortnight after the death of this case, I was summoned to a cow, about six miles away, in the township of Coppull, near Chorley. This animal was

considerably older than the two former, having had several calves, and, as in the preceding cases, was found ailing two days before I was sent for, since which time she had been entirely off her feed. The principal symptoms I found were extreme coldness of the whole body, a small quick feeble pulse, drowsiness and great depression of the nervous system, and A STRANGE DESIRE TO DEVOUR HER CLOTHING. Although food of every description was persistently refused, she had deliberately masticated and swallowed a large portion of a horse rug and some sacks which had been placed upon her.

Two days afterwards I again saw her, when I found every symptom of approaching dissolution. The pulse was almost imperceptible, very quick, and extremely irregular; the breathing slightly stertorous and slow; the whole surface of the body of an icy coldness; there was a copious flow of saliva from the mouth, and the depression was now intense; but though evidently fast sinking, there was still the same depraved appetite and unnatural desire to masticate her clothing.

This was the last time I saw her alive, as she died a few hours after my visit, but I was afforded an opportunity of making a *post-mortem* the following day. The carcase during the night had been dressed for food by a neighbouring butcher, and being seized by the police I was called upon by them to make a *post-mortem* for the purpose of giving evidence. This I did in conjunction with Mr. Hutchinson, M.R.C.V.S., of Leyland; but the whole of the abdominal viscera having been destroyed, our examination was necessarily imperfect. In the organs left for our inspection the only abnormal appearances to be found were met with in the trachea and pharynx. In the former the mucous membrane presented numerous ecchymose spots throughout; the pharynx we found in a highly congested state, the congestion extending around the posterior nares and up the Eustachian tubes. The brain was perfectly healthy, being firm in texture and quite free from congestion; its membranes also were normal.

During the life of the animal I had not been able, from the peculiarity of the symptoms, to form any satisfactory diagnosis as to the true nature of the disease, but I was now furnished with information which had hitherto been suppressed —why I know not—which, in conjunction with the *post-mortem* appearances, convinced me beyond doubt that it was a true case of rabies. On the morning of the 8th of November—just five weeks before her death—whilst being driven

to a neighbouring field, she was attacked by a large dog (which was passing along the road with a half-worried cat in its mouth), and bitten rather severely on one ear. The wound healed and did well, but on the Friday previous to my seeing her she was observed chasing a number of sheep and bellowing in a wild, unnatural manner; and from this time until her death paroxysms of bellowing, accompanied with great restlessness and excitement, would come on at intervals. These periods of excitement were always succeeded by the greatest depression, and it was in this depressed condition I had found her on both my visits. Being unaware of the true character of the disease, treatment, consisting of purgatives and strong diffusible stimulants, was adopted in the first stages, but without producing the slightest effect.

The fourth case I have to record occurred the day after the death of this animal, at Parbold Hall, a large farm about three quarters of a mile from the farms where the first two cases occurred, and five or six miles from the last case.

I learnt on my arrival at the place that the animal was a bull-calf, about nine months old, and had displayed very unusual symptoms since the previous Monday. The Croston harriers had on that day passed through the field in which the calf was grazing along with about a dozen others, and shortly afterwards it was found bellowing and rambling over the field in a state of the greatest excitement. It was supposed at the time that this had arisen in consequence of having been alarmed by the hounds, and would in a short time subside, and the calf, not being a valuable one, was neglected until my visit three days after. I regret to say I had not the satisfaction of seeing this case alive. It had separated from its companions, and for some time we were unable to find it, but eventually discovered it lying dead on the bank of a small pit, with its nose just immersed in the water, having apparently expired in the act of drinking.

I was informed, however, that since the previous Monday it had been in a state of the wildest excitement, incessantly bellowing and rambling round the field, and would instantly charge furiously at any one who approached it.

I availed myself of the opportunity of a *post-mortem*, but having to make my examination several hours after, in the open field by candle light, and in a strong wind, it was much less satisfactory than I could have wished. With the feeble light I possessed I was unable to detect any abnormal appearances except in the brain, of which organ I made as careful an examination as possible under the circumstances. The membranes were intensely congested; the brain also

was in a similar state, and on cutting through it the grey substance presented a dark ashy-red appearance, and was considerably softer in texture, especially in the anterior lobes around the *olfactory bulbs*. The congestion extended no further than the grey matter, the *choroid* plexus, *velum interpositum*, &c., being apparently perfectly healthy.

On inquiring if the calf was known to have been bitten by any strange dog, I was informed that, shortly before daybreak on the 8th of November, the shepherd, on going his morning rounds, had observed a large black dog, which he described as looking "fearfully hollow and hungry," in a field adjoining the hall, which, after making an attack on his own dog, crossed the fence into a contiguous field in which the calves were grazing, and ran in amongst them. It was not sufficiently light at the time to observe whether it attacked any of them or not, but he thought it probable it might have done so, as he could distinctly see all the calves running from it in a state of alarm. I was also informed that between five and six o'clock the same morning it had severely bitten a sheep dog at a farm about a mile further, which the owner—being apprehensive of hydrophobia—had subsequently kept tied up, and which, two or three weeks after the injury, had died, presenting undeniable symptoms of rabies.

I subsequently ascertained that it was the same dog which had attacked the cow at Coppall. It made its appearance at this place about two hours after leaving Warbold Hall, trotting along the road with a cat in its mouth, which it had picked up and carried from a cottage it had just passed, and which it dropped half killed on the road when it made its attack on the cow. Several dogs, a pig, and other animals, were afterwards attacked by it in various parts of the country (but the whole of the *bitten* ones, as far as I could ascertain, were immediately destroyed), and it was ultimately killed, three days after, by a labourer who was fencing, upon whom it made a fierce and unprovoked attack, but the man fortunately being armed with a hedging hook, he was enabled quickly to despatch it.

I could never ascertain that either of the two cases I have first mentioned had ever been bitten; but I think it is highly probable that the dog, whilst in the neighbourhood, might have crossed the farms and inflicted fatal bites on both animals.

It is worthy of note that nearly all the cases, although occurring at intervals of one and two weeks after each other, commenced almost exactly at the same period of the week, and nearly all had the same duration.

I may add that rabies has, unfortunately, been but too prevalent in this part of the country of late. In Wreston, a town sixteen miles from here, several cases occurred in the human subject in the spring and summer of last year, whilst at Bradley Hall, Eeeleston, a farm nine miles nearer, out of a flock of sheep ten had to be destroyed affected with rabies; and at Wrightington Hall, five miles from here, two yard dogs, which had been bitten by a strange dog a month previously, were shot last autumn, undeniably rabid; and even so late as January last a young man in the neighbouring village of Newburgh fell a victim to this dread disease.

RECOVERY OF A DOG FROM POISONING BY STRYCHNIA.

Communicated by Professor Williams, Edinburgh Veterinary College.

The following case having been forwarded to Professor Williams by Mr. Mackenzie, Druggist, George 4th Bridge, Edinburgh, has been transmitted to us for publication. Our present number also contains an analogous, although a much less severe case, by Mr. Macer (see p. 209).

Particulars of a case where a terrier dog was poisoned with strychnia and recovered.

A quantity of poison containing strychnia having been exposed in order to destroy vermin, a favorite terrier dog found its way to where the poison was laid and partook rather freely of it. The owner of the dog at once saw what had happened, and with the least delay possible hastened to me with the animal to see whether or not something could be done for its relief, knowing what was sure to follow the large dose of poison it had swallowed; the distance which the animal had to be brought occupied about fifteen minutes in travelling. By this time the animal had shown the usual and well-marked symptoms of poisoning by strychnia, and when I saw him I was under the impression that he was beyond all hope of recovery. To satisfy the owner that something, at least, was done for the animal, I administered ten minims of tincture of belladonna and six minims of chloroform with thirty drops of spirits of wine and two drachms of water. This mixture was administered with some difficulty. After swallowing the

draught he at once became stiff and rigid, remaining for a few seconds motionless, and apparently dead.

I next placed the animal on some straw on a table, and applied the handle of an electro-magnetic machine, fitted with damp sponges, to the back of the neck and over the extreme end of the spine. The effect was most marked and satisfactory. The dog at once exhibited symptoms of relief, and the spasms and rigidity were immediately removed, but only so long as the poles of the machine were in direct contact. I then applied chloroform on a piece of cotton wool to the nose, and kept this up from time to time so as to aid in subduing the pain. The spasms came on regularly for the first hour or two, at from five to ten minutes' interval, and for the next two hours they would vary from fifteen to thirty minutes' interval. Throughout the four and a half hours, during which the treatment was carried on, it was satisfactory to notice that the most violent spasm was at once subdued by the magnetic application, for if the poles were removed for an instant the animal exhibited most distressing symptoms of pain. It was also very noticeable that when the point of the finger was placed on the animal it exhibited signs of great uneasiness; yet, when the damp sponge handles of the electro-magnetic machine were placed on the spine he at once became quiet, and the dull heavy eye became brighter. After four hours' constant treatment in this way the dog was able to walk about, though still very feeble. I then gave him a dose of areca-nut powder, with half an ounce of castor oil. On the day after he was as brisk as if nothing had happened.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 111.)

Though there are several curious plants which might be interesting to refer to under the term of blight, we can now only afford to mention the single species of *Puccinia graminis*, which is found so mischievous to our cereal crops. This species is here chosen, not only as a typical one of the genus, but as it affects both the corn and the straw, especially of wheat crops, it cannot fail to be interesting to our readers;

at the same time it will be well here to state that, like the Uredines, the Pucciniæ are found on most plants, and the black spots so common on the under sides of rose and bramble leaves, the brown spots on the mints, and the dark red ones on the saxifrage, are all under the microscope resolved into clusters of most beautiful and singularly formed plants, the general characteristics of which are that they consist of from two to four, and even six cells, placed end to end, like rows of attached beads, in the interior of which are the sporules. These are surmounted on more or less elongated pedicles.

In the *Puccinia graminis* we have a series of oblong or linear clusters—first of a dirty-brown colour, afterwards black, situate on the leaves and stalks of corn crops, but especially on wheat, and which is commonly but erroneously known to the farmer as mildew.

The spore cells are mostly two in one form, and divided by a slight constriction, and having a short pedicel; in *b* the constriction is much greater, and the pedicels twice the length. Both these are common to wheat, and they occur with examples of a single-celled spore case, and, indeed, show all stages of progress, from the Uredo to the Puccinia, on which account Professor Henslow was inclined to consider them as but different states or stages of Puccinia, a notion in which, from repeated examination, we entirely coincide.

But be that as it may, the Uredo, which mostly commences its attacks on the blades and sheaths of the leaves, always results in a lessening of the quantity and an injury in the quality of the grain, and this effect is greatly aggravated if the Puccinia succeeds, as its effects are more confined to the straw, and are the cause of great injury to the farmer no less than to the people at large, as our daily bread is not only diminished thereby, but, as it is deficient in nitrogen, it is not so nutritious. From this cause straw is so injured that there is reason to believe that horses or cattle partaking of it largely in the shape of chaff suffer immensely, but whether from a deficiency in its nutritive value, or from any medicinal effects, has not been made clear.

Various modes of obviating this defect have been proposed, amongst which steaming the chaff is mostly in favour. That this process would render it more digestible is probable; but as the real defect appears to be a conversion of feeding matter in the growth of fungus, we should advise choice to be made of bright straw for all feeding purposes in which this article —poor even when at its best—is employed.

This affection of wheat is the one so prevalent in Australia, and also at the Cape, and, indeed, it would seem in all newly

broken-up districts, including newly broken-up pastures. At home there is a great liability to the growth of this fungus; and if we want better specimens than usual, we cannot do better than seek them in the old dung-heap, where growing wheat is sure to be quite black in the straw from this pest, which seems to show that a plethora of nutritive or manurial matter is the cause of the affection. Salt as a dressing is said to be a remedy; and a former pupil of ours (Mr. Robert Holland) has written to us for specimens from that country, affirming that it is with them in Cheshire a great rarity, probably from the quantity of salt which is there employed as manure.

But whatever the cause of this blight, or whatever its cure, it will be found a matter of great importance to every farmer and stock-breeder to become well acquainted with it, as however abundant the ears or straw, there will assuredly be a falling off in the yield of the corn, as well as a depreciation in its quality, where the crop is much affected by it, and the straw is thereby rendered next to useless except for litter.

Besides these, almost every plant has its peculiar forms of mould and mildew; thus the mildew of the turnips, both the common and Swedish varieties, are well known. The hop mildew, again, is a presage of blighted hopes for this valuable crop. Potato leaves are also affected with mildew, so again are cucumbers and melons, and, indeed, few crops but may suffer at some period from the effects of mildew, and the forms are so numerous, probably more than one affecting some of our species, that it would be endless work to attempt even a slight description of them. Suffice it to say that, in their curious and delicate forms, the microscopist may find matter for something more than amusement, or even admiration, as their history is very obscure, though, at the same time, whether, as some assert, they are the cause of the injury to the crop of which their presence is a sure indication, or whether they are the result of some previous constitutional mischief, occasioned by alternation of drought and moisture, their more frequent precursors. One thing is quite certain, that they result in crops poor both in quality and yield.

It is an interesting fact that the ravages of this tribe of plants are at once arrested by the application of flowers of sulphur; by dusting our greenhouse plants, which suffer enormously from this cause, we at once arrest the further development of mildew; so both for the hop and vine mildew this material is now largely employed.

How, then, does this act? It may be said to be as great

a mystery as the action of some medicines; but still the fact is well known, and we have in our own cucumber-house produced mildew on the leaves at pleasure, and with equal facility destroyed the parasite by a small dusting of sulphur.

We now come to the discussion of the general facts connected with moulds. Every one knows the blue mould which is so agreeable in a ripened Stilton cheese. Housewives, on the contrary, are often annoyed at the mouldiness of their jams; while mouldy hay, straw, and corn, is sometimes rendered too familiar to us. In mouldy hay the dust which accompanies its removal will be the myriads of minute spores of this fungus.

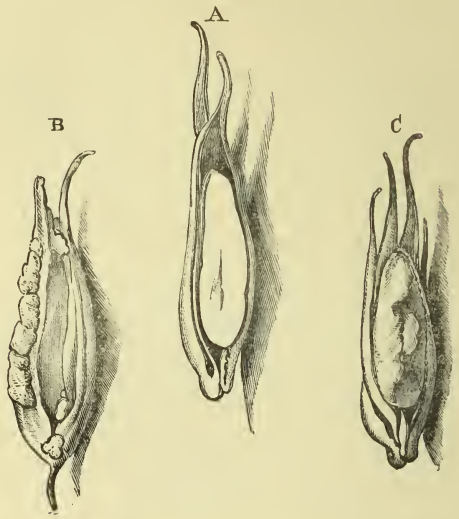
It would appear that various forms of mildew and mould are found in several cases of disease in animals; thus Messrs. Harley and Brown, in their demonstrations of microscopic anatomy, describe the *Oidium albicans*:—"The well-known thrush fungus is developed on the mucous membrane of the mouth, tongue, and œsophagus, in aphtha, as well as on the surface of sores and diphtheritic exudations. It is a fungus found almost everywhere. It grows equally well in aqueous solution of strychnine or oxalic acid as in the most benign liquid. Its spores are constantly floating about in the atmosphere, and the fungus consequently springs up wherever it finds a suitable habitat, a moderate heat and moisture, in conjunction with the presence of animal or vegetable matter, being all that is necessary for its development." It is, however, doubtful whether the species, in all these situations, are identical; and it is still, too, a vexed question whether or not they are in any way the cause or merely a result of disease, and consequent decay or eramacausis.

In illustration of this subject, we reproduce, in an amended form, some woodcuts of fungi in oats, published in the *Veterinarian* for February, 1862. The cases were reported by Mr. Mitchell of six horses having died suddenly, it was believed, from poisoning. No poison, however, was found on analysis; but the oats were suspected, and it appears that three feeds of the oats then in use given to a horse caused death. The case was investigated by Professors Varnell and Tuson, and some of the suspected oats given by them to a mare at the Royal Veterinary College caused her death.

The oats, it appears, had a musty odour.

The seeds on being slightly magnified appeared in some instances not only altered in their structure, probably ergotised (c), but they were also covered externally with fun-

goid growths (B) of several kinds, among which ergot, mould, and mildew, seem conspicuous.



Diseased Oats magnified 200.

FIG. 1. *Oat-grains enlarged.*—A. Section of healthy grain. B. Diseased oats covered with fungi. C. Section of grain with horn-like body.

These fungoid growths were examined by Mr. Jabez Hogg, and our next figure shows a fungus consisting of delicate, flexile, elongated pedicels, surmounted by a thin membranous case, which, on bursting, exposes myriads of spores. These spores, in rows, assume a brush-like form, and hence the plant has been named *Aspergillus,* from the brush used for sprinkling holy water in the Roman Catholic services.

The third figure contains a mixture of various fungi, amongst which the Aspergillus is still conspicuous, but the right of our cut shows what appears to be some very minute agarics. These afford convincing proof that the oats must have been kept in a shameful state. Probably originally badly grown, and it would seem from, in every way, a diseased crop, which was doubtless harvested badly, and kept in a bad condition afterwards.

But now that we have spoken of these oats as probably ergotised, it may be well in this place to offer a few remarks upon this affection, to which grass seeds are so liable.

Our readers are well acquainted with the drug called ergot of rye. It is thus described in the 'Veterinary Pharmaco-

FIG. 2. *Aspergillus glaucus.* $\frac{200}{1}$ diameters.

FIG. 3. *Mixed Fungi on the surface of the Oats.* 100 diameters

pœia,' by Professor Tuson,* "ERGOTA, Ergot, *Ergot of Rye,* the sclerotium (compact mycelium or spawn) of a fungus, *Clariceps* (Cordiceps?) *purpurea,* produced within the palæ of the common rye, *Secale cereale.*"

"*Characters.*—Subtriangular, curved, with a longitudinal furrow on the concave side, obtuse at the ends; from one third of an inch to an inch and a half in length; violet brown colour superficially, pinkish internally; solid, frangible, fracture short; faint odour, which may be increased by trituration with solution of potash" (pp. 92, 93).

Ergot has long been known as prevailing to a considerable extent in the rye of the Continent; and it is principally from this corn that the ergot of rye used in medicine has been obtained, and the terrific effects of its presence in rye bread have been pointed out by various medical authors. Amongst other diseases incidental to its prolonged use, even in small quantities, is that of gangrene; its more immediate operation upon gravid animals appears to be the procuring of abortion. Here, then, this is, as we think, properly viewed as of fungoid origin, and it would seem that, like so many other fungi, though growing from most harmless matters, the altered growth possesses very active properties. Cook, in his 'British Fungi,' says:—"Bread made of ergotised grain produces a form of disease called ergotism, which has at different times overspread large districts on the Continent, as though it were the visitation of the plague."

And as one of the grasses in which it occurs in great quantity is the *Lolium perenne,* perennial rye, a prevailing grass in all good pastures, it often becomes a matter of great importance to look well to a meadow in autumn before turning in cows. Some years since the late Earl Ducie suffered considerably from the dropping of the calves of some of his most valuable stock. At this time a quantity of ergotised rye grass was gathered in the field where this accident took place, and submitted for our inspection; and from the report given us of the general state of the meadow, we have little doubt but that this diseased grass was the cause of the accidents which occurred.

The quantity of ergot in some low damp meadows is quite astonishing; however, it is lessened by good draining. Uplands are much less affected. In the Cotteswold district the bands of oolitic clays are often clearly made out by the quantity of ergotised grass.

* This concise and logically arranged work should be in the hands of every medical man, be his practice either with the higher or lower animals.—J. B.

We have gathered ergot from almost every species of grass, but it occurs to a very inconsiderable extent in other grasses of the pasture. The *Poa fluitans*, a water grass, and *Bromus asper*, perhaps, are next to the rye grass in our common meadow species, but these, from their quality and position, can have but little effect of a baneful kind; and, indeed, it is just possible that the effects noted may, to some extent, be due to those diseased conditions by which ergot is produced.

Professor Tuson, speaking of the actions and uses (of ergot), says:—"In large doses, irritant poison; in medicinal doses, styptic in hæmorrhages of the lungs, kidneys, and other organs, but principally used as a parturient, *i. e.* to excite the uterus to contract and expel its contents during parturition. Its efficacy in this respect is, however, doubtful on the lower animals" (p. 93).

Now, although its action on the uterus of the lower animals is mentioned with a degree of doubt, yet it is possible that an animal taking the quantity that might sometimes be consumed in depasturing, or in ergotised corn, would be likely to suffer all the evil effects attributed to ergot on the human species, amongst which, probably, abortion in gravid cows would be but a first symptom.

Viewed in any light then these fungoid forms, whether of the higher groups or those so low, and, we may say, apocryphal, as scarcely to have been rigidly determined whether they be plants or no, are of the highest interest, and require a more extended examination from both the medical schools than they have yet met with; and it is gratifying to find that many eminent microscopists are working at some of these obscure forms of *Life* which, not a few already intimate, are implicated in the production of some of the still more obscure forms of *Death*.

POISONING OF A DOG BY STRYCHNIA.

By James Macer, M.R.C.V.S., Westow, Huntington.

On Tuesday, February 1st, my attention was directed to a dog which, upon examination, presented the following symptoms:—Hurried breathing; eye somewhat amaurotic; twitching of the muscles, especially those of the fore extremities; the muscles of the back and hind extremities very rigid and contracted. Upon the animal attempting to rise he was unable to do so, and could only drag the hind extremities along the

ground. If the slightest attempt was made to touch the animal, exacerbation of the symptoms ensued.

From what I saw I concluded the animal was suffering from the effects of strychnia, and upon making further inquiries my suspicions were verified, as the following particulars will show.

The previous day the owner of the animal had been dressing his corn stacks with a preparation containing strychnia. On the following morning several mice were noticed lying dead around the stacks. The groom said he saw the dog eating some of the mice shortly after seven o'clock p.m.

My attention was called to him about eleven a.m. About a quarter of an hour before I saw him the man in attendance noticed the animal, as he described it, to be taken in a fit, and turn up all at once, as if about to die. As nearly as I could ascertain, it was from three to four hours after the dog had partaken of the mice before the effect of the poison began to show itself.

Treatment.—Being some distance from any town, and not having anything with me appropriate for the case, I thought it a favourable opportunity to try the effects of tobacco. I administered a decoction of shag tobacco. The effects were very marked.

Upon again visiting my patient at two p.m., I found him very much relieved. The twitching of the muscles and spasmodic contractions had ceased. The breathing was more tranquil, and the animal was able to walk across the place in which he was confined. I repeated the agent.

At seven p.m. I gave Ol. Ricini ʒi, and ordered the animal should be kept perfectly quiet and not disturbed.

Wednesday 2nd.—Animal convalescent, bowels responded to medicine.

I have since seen the animal; he has perfectly recovered from the effects of the poison, evidently to the satisfaction of the owner, as he was a valuable animal.

I consider this case of some importance, as pigs are sometimes let into stack yards to pick up corn that may be lying about. Should there be a quantity of mice fall from the stacks and the pigs eat them, as they would, it might prove a serious loss to the farmer.

Pathological Contributions.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the number of foreign animals brought by sea to ports in Great Britain, which on inspection on landing, within the month of January, 1870, have been found to be affected with any contagious or infectious disease, specifying the disease, and the ports from which, and to which, such animals were brought, and the mode in which such animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Antwerp...	London ...	Foot-and-Mouth.	...	...	...	82	82	82
Boulogne .	London ...	,,	5	...	...	...	5	5
Dort	London ...	,,	14	...	...	...	14	14
Hamburg .	London ...	,,	6	...	...	...	6	6
,, ...	Hartlepool	,,	3	...	...	...	3	3
,, ...	Newcastle-upon-Tyne	,,	2	3	...	...	5	5
Harlingen.	London ...	,,	...	31	...	...	31	31
	Total ...		30	34	...	82	146	146

"ALEXANDER WILLIAMS,

"Privy Council Office, Secretary.
"Veterinary Department, 14th February, 1870."

CATTLE PLAGUE.

THE intelligence received from Eastern Europe relative to the extent and progress of the cattle plague is far from being reassuring. It was hoped that all danger had passed with reference to an extension of the malady from the

western and south-western parts of Poland into Prussian-Silesia; but recent information has shown that the Prussian Government had found it necessary to extend its precautionary measures in that direction, and to have the frontier guarded by troops from Neuberun in Silesia to Weisehinic in the department of Posen. Not only is Prussia threatened with an invasion of the disease in her south-eastern provinces, but also in her north-eastern, as the plague has extended in Russia as far northward as Knovno. To meet this new source of danger the Government has despatched troops to guard the frontier from Tilsitt to Pillkallen in East Prussia. Poland is suffering to a great extent from this visitation of the plague, as is likewise Galicia, Transylvania, and Buckoweria.

PLEURO-PNEUMONIA.

A DECLINE of this disease has taken place during the past month; the existence of the malady being reported in 31 counties as against 35 in the preceding month, and in 131 centres as against 167. In Ireland, however, the malady has spread to an alarming extent, particularly among dairy stock. It has also assumed a most malignant and infectious type. Under these circumstances it is much to be regretted that no efficient check seems as yet to have been put upon the practice of shipping animals infectiously diseased from that country, both to England and Scotland.

SPLENIC APOPLEXY.

WE have received accounts of rather serious losses from this disease in different parts of the country. The cases, however, are isolated; and in most instances they have not occurred within many miles of each other. Norfolk, in common with other cattle-feeding counties, has suffered from the malady.

FOOT AND MOUTH DISEASE.

THE number of counties in Great Britain in which foot and mouth disease exists is 58, and of centres of the infection 1185.

At the corresponding period of the past month, 1531 farms and premises were infected, and 64 counties. It will thus be seen that the decline of the disease has steadily gone on since its commencement about three months since. In Ireland the disease would appear to have been most effectually stamped out, as no cases have occurred for the past two or three weeks. This has only been accomplished by unceasing vigilance and untiring energy on the part of the Veterinary Department of that country.

Foot and mouth disease is probably the most wide-spread infectious disease of cattle which is known. It not only exists in Europe as a whole, and is known in Asia Minor, but in India and other far distant parts of the continent of Asia. Africa also is known to be infected, and recent accounts have shown that the cattle of Port Natal, &c., frequently suffer from the disease.

SCAB IN SHEEP.

This disease still persists in many parts of Pomerania, particularly in the district of Griefenberg, Stettin. No fresh importations, however, of sheep suffering from the affection have taken place. In England the scab is reported as being on the increase, having an existence in no less than thirty-four counties. It also prevails in several parts of Scotland and Wales.

We have again to report the loss of sheep from the use of improper dipping mixtures; and in one case just brought to our notice, two or three bullocks had died from the poisonous effects of a sheep-dipping compound which had been applied to the skin for the destruction of lice. The mixture was used in too large a quantity; and besides its injurious effects locally, the animals are supposed to have licked a considerable portion of it from off each other.

GREAT FATALITY AMONG SHEEP AND CATTLE IN MOROCCO.

We learn that immense losses have very recently taken place among the cattle and sheep in the province of Mazagan, Morocco, which are thought to have depended on the long-continued rains and inclemency of weather.

It appears that the want of sufficient pasturage during

the great drought of the past summer had reduced the cattle and sheep to such a weak state that they were unable to bear up against the severity of the winter. In the province of Mazagan alone, forty thousand cattle and thirty thousand sheep are said to have perished; 75 per cent. of the animals, on the average of the attacks, being swept away.

Facts and Observations.

Coal and Iron in the United States.—The quantity of iron made with bituminous coal in Pennsylvania, in 1868, was 194,000 tons (in round numbers), as compared with 191,072 tons in 1867. The production of iron made with anthracite coal in Pennsylvania, in last year, amounted to 671,955 tons, as compared with 594,270 tons in 1867. The production of anthracite iron effected last year in Pennsylvania involved a consumption of 1,512,000 tons of coal. The production of rolled iron in Pennsylvania last year is computed to have been 520,000 tons, as compared with 490,081 tons in 1867. Railway iron figured in the total for 1868 to the extent of 276,500 tons, against 245,081 tons of the previous year. In 1868, the rolling mills of Pennsylvania consumed 1,210,000 tons of coals, of which 380,000 were anthracite, and the remainder bituminous. It is curious to observe that, notwithstanding the increase in the demand for railway iron in the United States since the close of the war, the native productions do not appear to have been very materially extended.—*Popular Science Review.*

Medical Science at the British Association.—The only medical communication of importance at the British Association meeting was that of Dr. B. W. Richardson, in the form of a Report on Anæsthetics. The author dealt with the chemistry of the whole series of complex organic compounds relating to this class of bodies. He showed that they produced only marked effects when introduced subcutaneously, and that administered in this way they were twice as active as given in other ways. He again declared against the supposed advantage of alcohol as a food.—*Ibid.*

The Formation of Oil in Olives.—At the meeting of the Vienna Academy of Sciences on October 21, a memoir

by Herr Harz was presented to the class on the above subject. The author thus classified his results in summarising his paper:—1. This secretion in its first formed condition does not possess the common properties of the fat-oils. 2. It is inclosed almost till its complete development in true secretion-cells, the walls of which can be made visible by reagents. 3. These secretion-cells are not simple, but contain within themselves a number of other secretion-cells (daughter-cells), which, gradually developing, are finally converted into oil, while the membrane of the mother-cells itself also changes into oil. 4. This membrane was rendered visible by treatment with Miller's salt, or still better, first by this salt, then with aniline solution, and lastly with iodised chloride of zinc, these three reagents together colouring it a beautiful deep blue.—*Ibid.*

Influence of the Hop on Fermentation.—If we are to believe the statements of Signor Tigri, the flowers of the hop arrest immediately the development of yeast.—*Ibid.*

The Scarlatina Fungus.—Hallier asserts that scarlet fever is the product of a fungus which he names *Tilletia scarlatinosa*. We hope it will be better established than his well-known cholera-fungus. He says he has never seen such an immense number of micrococci in the blood of any other infectious disease. These are at first as small as the finest pin-point, or the most minute granular matter. They are present in far greater numbers than the blood-globules themselves; both swimming free in the serum and accumulated in granular masses and groups. They both accumulate on and penetrate into the blood-globules. The white corpuscles as well as the red globules are supplied with them, almost without exception. Just as there is a great resemblance between the seeds, roots, stems and leaves of plants, so do the microscopic germs develop themselves into sprouts and shoots which resemble those of many other microscopic plants.—*Ibid.*

Brunner's Glands not Follicular. — At a late meeting of the Academy of Sciences of Vienna, Herr Brücke presented a paper, by Herr A. Schlemmer, on the character and position of the intestinal glands known as Brunner's. He finds them most abundant in the horse-shoe bend of the duodenum, and he states, further, that they are not follicular glands, as has been asserted, but are truly tubular structures. —*Ibid.*

The Transmissibility of Tuberculosis.—So much has been said on the affirmative side of this question, that the views of M. Dubuisson, published in the *Gazette Médicale*, are deserving attention. After describing numerous experiments, this young physiologist lays down the following conclusions:—1. The inoculated materials are generally harmless whatever may be the nature of the substances employed. 2. They occasionally produce rapidly fatal symptoms —death being apparently caused by a sort of poisoning. 3. In a few cases lobular pneumonia is observed, and should probably be regarded as the result of the inoculation; here the hepatized tissue might be mistaken for tubercles. 4. Tubercular tissue given as an aliment may occasion death, as would similar septic products. 5. Generally, however, the animals that eat of tuberculous lung experience some *malaise* from this improper alimentation, but do not become tuberculous. These conclusions, confirmed by other observers, demonstrate that tuberculosis is neither virulent nor contagious nor the animals experimented upon.—*Ibid.*

Preserving Iron and Steel with Sulphur.—A mode of protecting iron from atmospheric influences has been proposed by Messrs. Macmillan and Macgregor, of Dumbarton and Glasgow. They bring melted sulphur into contact with the cold metallic surface to be coated. The sulphur chills and sets into a hard, thin protecting covering.—*The Journal of the Society of Arts.*

Meat Supply.—It is stated that extensive arrangements are now being made in Prussia for the slaughter and preparation of meat, to be supplied *via* Hamburgh to the London market. English slaughterers have been sent over to dress the meat, and hind-quarters only are to be imported into England.—*Ibid.*

Preserved Fish.—The *Sydney Empire* states that a new export has been added to the list of Australian products, one from West Australia, the manufacture of preserved fish, and the inventor has succeeded in producing an article quite equal to that imported from England and America. Large quantities of preserved fish are annually imported into Sydney, while a full supply of the raw article is to be found along the coast.—*Ibid.*

THE VETERINARIAN, MARCH 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

THE FORMATION OF A CENTRAL VETERINARY MEDICAL SOCIETY.

LONG talked of, but not yet realised, may be fairly asserted of the idea suggested by the title—a Central Veterinary Medical Association. There is nothing very unpractical in the idea; provincial societies arise and flourish on the smallest provocation, while in the metropolis all the efforts which have been made to found a central society may be said to have utterly failed.

In 1828 Youatt succeeded in establishing a veterinary society, but his efforts were not well supported, and after a short time all attempts to keep it alive proved unavailing. In 1836, when the present Students' Veterinary Medical Association was established, another effort for forming a central society was put forth, but proved ineffectual. Since then little or nothing has been done, although several suggestions have been made. A few years ago some of the leading members of the profession got so far as the framing of rules and bye-laws of such a society.

Directly in contrast to this very unsatisfactory state of affairs, we have in the agricultural world the very type of an actively useful central society, having no political bias, but practically wielding an immense influence in the affairs of the farming community. Farmers' clubs are even more plentiful than Veterinary Medical Associations, but they are all represented in a great measure by the Central Farmers' Club, which, in its place, is the kind of society we desire to see established in the veterinary profession. The first step in the development of this scheme is to obtain a competent and energetic secretary, who at the beginning must work "for fame, not fortune." The society once fairly established should, however, be prepared to remunerate their secretary, as this is just the kind of work which demands fair payment.

Presidents, vice-presidents, and treasurers may very well afford to devote an occasional hour of their valuable time to the general interest; but the business of the secretary is incessant, and often most important when least obtrusively apparent; and it is simply absurd to expect any good man to sacrifice his time and professional opportunities for nothing beyond the soothing conviction that he has done his best for his friends. No real difficulty, however, is likely to arise on this score; all that is wanted is the right man to undertake the work; he may confidently reckon upon the support of the profession, every member of which would naturally claim the right to be a member of the Central Veterinary Association.

MEMBERS OF COUNCIL AND THE VETERINARY ASSOCIATIONS.

A RESOLUTION, emanating from the Yorkshire Association, relating to the election of members of Council, has been submitted to several associations in various parts of the kingdom, and so far as we have seen has always been approved. This resolution affirms the propriety of ensuring the proper representation of the associations by returning a member from each to the Council of the Royal College of Veterinary Surgeons.

Without at the present time discussing the value of the principle which is involved in the resolution, we may be allowed to express our belief that the thing proposed is quite impracticable. The Charter provides that members of the Council shall be elected annually at a general meeting of the profession. No particular societies have special privileges in this respect; and it is difficult to see how in the exercise of ordinary electoral rights the members of associations can secure the return of their selected representative.

To put the matter *argumentum ad hominem*, six members of Council go out of office every year, but are generally re-elected—at least, the majority of them are. If all the

associations in the kingdom choose to combine, select six men, and attend the next annual meeting in overwhelming force, they can, doubtless, return them; and in a few years the Council, instead of representing the profession, would represent the societies; but this is not what the societies mean, and assuredly it is not what they will effect. Short of this we are at a loss to understand what the resolution amounts to.

For reasons which we do not care now to fully explain, we look with some misgiving at the attempt, feeble though it be, to mingle veterinary politics with veterinary science. *Ars longa vita brevis* should be their association's motto. Medical societies are a power in the profession, but not a political power; as a body, each society is pledged to do its utmost to advance the interests of veterinary science; but if any two things on earth are hopelessly irreconcilable, those two are science and politics.

Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Occasional Papers on Veterinary Subjects. By William Dick, late Professor of Veterinary Surgery to the Highland and Agricultural Society of Scotland, Veterinary Surgeon to the Queen for Scotland, Founder of the Edinburgh Veterinary College, &c. With a Memoir by R. O. Pringle, Editor of the *Farmer's Gazette.* William Blackwood and Sons, Edinburgh and London. 1869.

Professor Dick wrote but little on veterinary subjects, as the Editor of 'Occasional Papers' remarks, and what he did write usually took the form of articles in the veterinary and agricultural papers on some subject of the day. Perhaps the professor was fully aware that he did not belong to a reading profession, and felt little inclined "to weary himself

in the fire for vanity," with little hope even of arousing the sympathy of his professional brothers.

The 'Occasional Papers,' collected into one volume, form an interesting, if incomplete, record of the peculiar opinions of the writer on many disputed points *anent* the various contagious diseases attacking cattle and sheep.

Mr. Dick was a non-contagionist in every sense of the word; and his arguments, in some cases, read oddly enough now that the maladies, against the infectious nature of which he strongly contended, are known to be highly infectious.

Among the subjects which are most interesting in the list of papers by the late professor, are the anatomy and diseases of the foot of the horse, the use of purgatives in tetanus, a supposed disease in cattle called the tailslip, the non-contagious nature of epizootic diseases, fatal affection of the bowels of horses, resembling cholera, and the influence of the mind on the modification and cure of the diseases of the body, all these are treated in the most original manner.

The following extract, in reference to the non-contagious nature of pleuro-pneumonia, shows the kind of impression which observation of the facts attending an outbreak of the disease made upon Mr. Dick's mind, as well as upon the owners of the animals:

"In the end of October, 1856, from 30 to 40 young cattle, belonging to different farmers, had been grazing during the summer on Irvine Common; one of them was seized with pleuro-pneumonia, and died. The owners were afraid of infection, and knew not what to do, as the time had come for taking the cattle home. After consultation, Mr. M'Call, V.S., was requested to examine them; he found them free from disease, and after they had been home not one of them became affected.

"In the same month, a person of the name of Campbell, at Irvine, kept three cows. One took the disease, and died; another was seized, but recovered; while the one standing between these two was never affected.

"I shall conclude my remarks on the contagion or non-contagion of pleuro-pneumonia by the following communication from Mr. Hunter, who gives his experience on the subject:

"'The Haugh; 18*th November*, 1857.

"'Dear Sir,—I beg, in accordance with your request, to send you a few notes of my experience of pleuro-pneumonia. The first case I ever saw occurred about twelve years ago in

a lot of young cattle of my own breeding. They were grazing in a field by themselves, and had never at any time come into contact with any other stock. Where *infection* could possibly come from I never could conceive, as at that time the disease was unknown in this district; but one after another was seized at short intervals, till three of them died. The others were kept on, and continued perfectly healthy. The disease made its appearance amongst my feeding stock in the ensuing winter, and during that and several succeeding seasons I suffered very severely. Curiously enough, my *immediate* neighbours had not a case for a considerable time after it got a footing here; whilst some others, at a few miles distance, were as bad as myself. From all I could observe regarding it, I became convinced that the disease was not infectious; and acting upon this belief, when many of my neighbours were taking all manner of precautions—white-washing, &c.—some of them even going so far that they would not enter my courts for fear of carrying infection to their own, I continued to pursue uniformly the same course as I had done before it made its appearance. By-and-bye, in spite of all precautions, it found its way into the other stocks round about, and they suffered as much as my own had done.

"'I never could say whether court or byre feeding was the more favorable for its development, as it used to skip about from one to the other, up and down, both in a manner altogether inexplicable, sometimes confining its attack to one lot of cattle, and again wandering, apparently at random, through them all. Whenever a case was observed in the byre, the animal was sent off, and another put in its stall, without previous fumigation, washing, or even removing the turnips the diseased animal had been eating. This I did very frequently, pretty much by way of experiment, and *in no case* could I ever trace any bad effects to having done so. One rather strong case I may mention, which much confirmed me in my practice. In 1846, a lot of cattle suffered so severely at grass that I determined to sell off the remainder, and when buying a lot to replace them the salesman told me that they belonged to a friend of mine, who was disposing of them because so many of them had gone with disease, and he could not put them into my hands without warning me. Thanking the agent for his candour, I bought the cattle, and put them into a court, with only a wall dividing them from another lot. I had not in either of those two lots a single case of disease. Its visits for some seasons past have been comparatively rare—occasionally a whole

winter passing without a case. I generally graze from thirty to forty cattle at my farm on the Pentlands, and there of late I have had a few cases. This season I bought three firts, which were sent up at different times. One lot of ten became affected, and four of them were sent off, though grazing in adjoining fields, and occasionally mixed. None of the others showed any symptoms. The shepherd's two cows took decidedly ill, but both recovered. I have now upwards of eighty cattle of various kinds, all of which, with the exception of *one* more out of the ten above noticed, which has been sent away, have hitherto kept healthy. A small Shetland cow, which has been grazed quite alone all summer, I may mention, was very ill some time ago, but, with some medical treatment, was brought through. I will be glad to find that the preceding proves of any use to you; and if I can furnish any further information it is heartily at your service.'"

A memoir of the late Professor Dick commences the book, and at the close there is a long record of the proceedings of the Edinburgh Veterinary College, of which the late Professor Dick was the founder, and during nearly his whole professional life the able and successful supporter.

Extracts from British and Foreign Journals.

OBSERVATIONS ON THE PREVAILING DISEASE OF CATTLE, KNOWN AS ECZEMA EPIZOOTICA, EPIZOOTIC APHTHA, VESICULAR DISEASE, DISTEMPER, MURRAIN, OR FOOT AND MOUTH COMPLAINT.

By Professor Brown, Inspector in the Veterinary Department of the Privy Council, and Veterinary Inspector to the Bath and West of England Society and Southern Counties Association.

(*Continued from p.* 70.)

For a period of six months in the summer and autumn of 1867 eczema was seldom seen: the cattle in the Metropolitan Market and the lairs were free from the affection, and a like immunity from its attack was enjoyed by animals all over the country. Isolated cases might be met with, but it is certain that at the time of cessation of the cattle plague the live

stock of the United Kingdom were more entirely exempt from infectious diseases than they had been for many years.

With the cessation of the cattle plague, however, there came the revocation of those prohibitive orders, which had been so salutary in their influence upon the health of stock while in operation; and almost at the same moment infectious diseases began to spread among cattle, sheep, and pigs. Mouth and foot disease re-appeared in the winter of 1867, and the first animals which were seen with the disease in the lairs of the Metropolitan Market were English beasts. The spread of the disease at this time was not very rapid. Cases occurred in the metropolitan dairies, and also in various parts of the country; but the malady was in what may be called its normal state of prevalence, and continued in that state the whole of the year 1868. During this period foreign animals also enjoyed a comparative freedom from the disease; and very few seizures were made at the ports, and those principally in the spring of the year, by the Veterinary Inspectors of Customs; and notwithstanding the unusual heat and drought of the summer of 1868, the disease did not extend from the few centres of infection which existed.

Early in the present year the importation of diseased animals from different parts of the Continent commenced, and up to this period seizures of infected cargoes have been frequent. Information from abroad proves that foot and mouth disease has extended from Bohemia to Saxony, Schleswig-Holstein, Holland, Belgium, Denmark, European Turkey, and Switzerland. Infected cargoes have been landed at the different English ports from Hamburgh, Bremen, Geestermunde, Tonning, Husum, Rotterdam, Dort, Antwerp, Dunkirk, and Boulogne.

Recently the malady has spread with remarkable rapidity in this country, in the metropolis and its suburbs, and also in distant parts of England and Scotland; not following in all, or even in the majority of instances, the movement of infected cattle as the cattle-plague did, but appearing in places quite remote from the coast, and least likely to suffer from the passage of diseased foreign stock. All cattle landed in the port of London are confined to the area of the metropolitan district, and at all the outports they have been, for some time past, kept in the defined part until slaughtered. Nevertheless the mouth and foot complaint has made in the course of two or three months such rapid progress as to have extended over more than half the counties of England.

Reports of the extensive prevalence of the disease have been received from Middlesex, Cambridgeshire, Kent, Herts,

Surrey, Hampshire, Buckinghamshire, Berkshire, Cheshire, Lancashire, Yorkshire, Durham, Staffordshire, Derbyshire, Warwickshire, Worcestershire, Suffolk, Shropshire, Nottinghamshire, Northampton, Oxfordshire, Lincolnshire, Norfolk, Essex, Northumberland, Cumberland, Aberdeenshire, Ayrshire, Fifeshire, Morayshire, Perthshire, Haddington, Lanark and Clackmannan.

In more than 200 districts in these counties the affection is admitted to exist, reports of fresh outbreaks, which already number over 2000, are received almost daily, and it is quite certain that a very large number of attacks have yet to be recorded.

Nature and General Character of the Mouth and Foot Disease in Cattle, Sheep, and Pigs.

Eruptive fevers (exanthemata) constitute a large class of diseases which are presumed to depend upon the presence of some poison in the system, its subsequent elimination giving rise to the distinctive symptoms of the malady. The mouth and foot complaint belongs to this class of disorders, and although ordinarily one of the least fatal, it sometimes assumes a very severe form, and occasions considerable destruction of the tissues of important parts. Perhaps there is no disease of animals which varies more in the degree of malignancy which it exhibits in different seasons, under apparently similar conditions. Foreign cattle frequently suffer from the malady in its most virulent form ; but English cattle are not exempt, under certain conditions which are favorable to the development of the virus, from the most violent manifestations of the morbid action. Susceptibility to an attack appears to be increased by travelling, by pregnancy, parturition, lactation, and also by change of locality; but neither age, condition, management, climate, temperature, nor any common causes of disease, seems to exert any modifying influence. No extremity of privation, nor the continued action of ordinary causes, is capable of inducing it; and one reason for the indifference which has been shown in respect of its ravages, is to be found in the belief of its spontaneous origin, an idea which arises out of the observation of its frequently unaccountable appearance in isolated places.

The conviction has gained strength from the discovery, long since recognised, that cattle when being travelled from fair to fair are often attacked ; but there is nothing remark-

able in this fact, when it is remembered that a tuft of grass by the road side often holds a sufficient quantity of saliva from the mouth of a diseased beast to infect a herd, and the short period of incubation of the affection accounts for its sudden outbreak during a journey which occupies only a few days. Some of the conditions which are essential to the spread of the disease are known, but others of them are obscure. It is certain that the malady is eminently contagious and infectious, but it is also true that its extension in certain years has been apparently governed by the laws which regulate the spread of epidemic diseases like cholera; and it has been found impossible to determine whether the majority of the attacks are to be attributed to the operation of morbific matter or virus, or to certain noncognisable influences, the existence of which can only be inferred from the effects produced. A reference to the previous observations on the history of the disease will show that, while there have always been centres of infection in this kingdom, the malady has prevailed over a large extent of country only at intervals. It is not necessary to devote any time to the examination of the hypothesis which refers the origin of all contagious diseases to the presence of a ferment in the blood. If the idea is merely advanced as an ingenious speculation, it may be left to amuse those who find an interest in the investigation of chimeras; but if the suggestion claims to be accepted as a theory, it may be refused on the ground that chemical and microscopic research have alike failed to demonstrate the presence of the germs of ferment, or the occurrence of any process in the circulating fluid at all resembling fermentation, either in its progress or its products.

Examinations of the blood of diseased cattle have been made recently in the sheds where the sick animals were kept, and the highest powers of the microscope have been used in the investigation, but no unusual organic particles have been found. The fluid is in a state of excessive molecular activity; the red discs are nearly all of them stellate in form, and change their aspect frequently, finally assuming the circular form. White corpuscles (Leucothytes) are more numerous than they are in healthy blood, and there are also seen many minute spherical bodies freely moving in all directions. Bacteria and Vibriones are constantly found; small masses of living germinal matter are also present; but it is worthy of particular remark that all these bodies have been seen in the blood and other fluids of animals affected with non-contagious febrile diseases. Further, it may be accepted as a positive truth, that organic particles which possess the

power of communicating infection to the healthy system cannot be distinguished from those which assist in the support of the tissues during the process of nutrition.

Microscopic examinations of the discharge from the eyes, the saliva, the contents of vesicles, and also of the milk, have resulted in the discovery of very interesting changes in the molecular constitution of the several secretions. The saliva when carefully collected, without touching the skinor mucous membrane of the mouth, is quite pellucid, and contains small stellate crystals, and minute spherical bodies (Monads), which move with activity in the fluid. In the limpid fluid of the vesicles there are large nucleated cells and masses of living germinal matter, besides Monads, Bacteria, and Vibriones. Similar bodies are found in the fluid discharged from the eye.

Specimens of milk obtained from cows in various stages of the disease have been submitted to microscopic inspection repeatedly, for the purpose of ascertaining, if possible, whether or not any change occurs in the constitution of the fluid likely to be injurious to the health of those who partake of it.

Nearly all the specimens of milk which were tested had a low specific gravity (1024), and generally a fair proportion of cream was thrown up. There were invariably found large granular cells, or white corpuscles having the general characters of the pus globule. The milk from one cow was examined from the commencement to the termination of the disease, and for three weeks after recovery, and it was observed that the pus-like bodies remained during the whole time. At the worst period of the affection the bodies were numerous, and as the disease declined they became fewer in number; but some where seen on the last examination, three weeks after recovery. Monads and Bacteria were also detected in every specimen, and these bodies remained unaffected, either in their form or rapidity of movement, by boiling. The specific gravity of the milk was found to rise slightly during convalescence from 1024 to 1027, the last number being within three or four degrees of the normal standard. In two instances the specific gravity of the milk was respectively 1032 and 1034, the quantity in each case being reduced to one-fifth of the ordinary yield. Milk taken in the evening from diseased animals gave evidence of the commencement of decomposition on the following morning. This was, in some measure, due to the high temperature which prevailed during the time the observations were made. When boiled, the milk remained good for twenty-four hours, under the same circumstances and at the same time.

What influence the numerous pus-like globules and granular cells, with the living organisms in the form of Monads and Bacteria, may exercise upon the health of the human subject it is impossible, in the absence of direct experiments, to determine; but the evidence in respect of its effects upon the young of the lower animals is very conclusive. Some years ago my colleague, Professor Simonds, lost three valuable calves in one day in consequence of allowing them to suck a cow which was suffering from the disease in the early stage. He also produced eczema in pigs by giving them the milk immediately after it was drawn from a diseased cow. Continental observers also allude to instances of the poisonous action of the milk on young animals.

Since the above observations were made, other cases of sudden death of calves from sucking the milk of diseased cows have been recorded. Within the last few weeks calves, which were apparently well when left at night, have been found dead in the morning from this cause, and there is too much reason to apprehend that, to the young of the mammalia in general, the milk from cows affected with mouth and foot disease is highly deleterious. Probably the most recent experiment with milk from a diseased cow was made in my own house. During the early period of the prevalence of the disease, when milk was daily sent to me for examination, I gave to a young cat a liberal supply of that which was left from my experiments. The animal shortly became very weak and ill, and, after the first few days, declined to accept the diseased milk, although no other kind was supplied in its place; indeed, at the time, the milk on my own table contained an abundant quantity of the morbid elements. Among the specimens sent for examination were some taken from animals which suffered from the effects of the disease in one or more quarters of the udder. These examples contained little else than pus corpuscles and exudatiou cells, with Monads and Bacteria; the milk globules were few and far between. This abnormal condition of the secretions may be a subject full of interest for the pathologist, but it is sickening to know that such morbid matter is used to swell the general bulk of the morning and evening quantum of milk which is supplied to the population, who, if any suspicion is aroused, are quite reassured by the dairyman's entirely romantic statement that "when cows have the disease all the milk dries up." Meat from diseased animals has also been carefully examined, and the results of the investigation are altogether satisfactory. No morbid products have been detected, and, excepting the presence of some of the parasitic

bodies (psorosperms), which were found abundantly in the flesh of animals dead of cattle-plague, and other malignant diseases, nothing of an abnormal kind has been observed. It may, therefore, be safely assumed that the meat of animals affected with mouth and foot disease is harmless, the more so that it always, unlike milk, undergoes some culinary process before being consumed.

From experiments, which will be hereafter referred to, it appears that the *contagium* is in a most active form in the saliva, and it is remarkable that this fluid contains the fewest morbid products. Nevertheless, its contact with the interior of the mouth of a healthy animal quickly causes the development of the disease. There is no evidence of communication of infection by the skins or other parts of dead animals, and it is not certain, although very probable, that the gaseous emanations from diseased beasts are dangerous to those in the immediate neighbourhood. The spread of the infection along a certain line of country from one farm to another is supposed to indicate contamination of the atmosphere, but, in considering this mode of communication, the fact of animals often remaining unattacked within five hundred yards of diseased cattle must be taken into account.

Period of Incubation.—According to the general acceptation of the term, the time of incubation of an infectious disease is the period which elapses between the introduction of the virus into the system and the manifestation of symptoms which indicate the existence of the disease, and in this ordinary sense the expression is now used. Some difficulty usually presents itself in reference to the determination of the precise moment of infection. It does not follow that healthy animals herded with diseased ones should at once become the subjects of the malady; on the contrary, they may resist its influence for some time, and, therefore, conclusions which are drawn from observations of the natural progress of an infectious disease are often erroneous, and always doubtful. Direct transmission of the virus into the system of a healthy animal furnishes the only reliable means of ascertaining with absolute certainty the moment of infection, and tested in this manner, the period of incubation of eczema ranges from 36 to 48 hours. If the rise of temperature be taken as a positive symptom, which it is not, the incubation stage will be much shortened, as this elevation of internal heat sometimes precedes by 12 hours the formation of vesicles in the feet or mouth. The extremely rapid action of the virus is evident from the fact that symptoms of fever are apparent in 30 hours after incubation, and the full

development of the characteristic sign, the formation of vesicles, is seldom delayed beyond the fourth day.

Professor Simonds ascertained some years ago, as early as 1839, that the introduction o. .. small portion of hay saturated with infected saliva into the mouth of a healthy animal caused the formation of vesicles in the mouth and feet in 40 hours; milk from a diseased cow given warm to pigs caused the disease in three days. Inoculation by puncture, and the introduction of the contents of vesicles, failed to produce any effects in cows, sheep, and pigs.

Experiments with hay saturated with saliva were repeated by us in 1867 with the usual result; the animal took the disease in a mild form, and completely recoverd in the course of a week after infection.

These observations have an important economic and judicial bearing, because they enable the veterinary pathologist to assert in reference to an outbreak of eczema in any locality, that the affection was in some way communicated not more than four days prior to the development of the disease.

Symptoms, Progress, and Duration of Mouth and Foot Complaint.

Most breeders of stock are acquainted with the general symtoms of the "distemper," even although they may not have made a critical inspection of animals affected with it in various stages. A person who is practically familier with the diseases of stock will at once recognise this affection by the gait and general aspect of the animal; lameness, discharge of saliva, and a peculiar smacking of the lips, are indications which are quite unmistakeable; but the observer will also distinguish other, and not less characteristic, phenomena. At the commencement of the affection the animal is dull and inclined to stand still, with the head somewhat depressed and the back arched. In some cases the hind feet are snatched up suddenly and shaken as though to get rid of something which annoys. The appetite is impared, there is a discharge of saliva, and also an increased secretion of tears, which trickle down the sides of the face; the milk is diminished, but only to a slight extent at first. The internal temperature at this early period varies considerably, and ne test of the thermometer is only valuable as an indication of the amount of fever, and the severity therefore of the attack. A comparison of many observations has led to the inference

that the average temperature is 104°, but the range is from 102° to 107°.

In a few hours after the manifestation of symptoms of illness, vesicles filled with a limpid fluid appear on the inside of the top lip, on the upper part of the tongue, on the palate, on the teats, between the digits, and often on the outside of the coronet just above the hoof, and sometimes on the soft parts of the heels. Those in the mouth are generally few in number and of large size; their situation is on the top of the tongue and on the palate, as far back in many instances as the soft palate. An examination of many heads of diseased cattle which were slaughtered has quite established the fact of the frequent existence of abrasions on the palate bearing a general resemblance to those found in cattle plague.

Sheep seldom suffer much from disease of the structures of the mouth in eczema, the principal affection being in the feet; vesicles occur between the digits and sometimes on the outer side of the foot, from which point separation of the hoof commonly commences. In some parts of the country, sheep have recently been very severely attacked with the disease, which in some instances has assumed the unusual form of an aphthous affection of the mouth and tongue.

Pigs are generally affected in the feet and on the muzzle, and sows suffer especially from the development of vesicles in the udder. Notwithstanding these minor differences, the affection is essentially the same in its general character in all the animals which are liable to its attack. According to the severity of the disease the symptoms of the succeeding stage will be more or less marked.

When mouth and foot complaint prevails in a benign form, the morbid action subsides in a few days; the vesicles burst and discharge their contents; the exposed surface becomes covered with yellow exudation and the abrasion is quickly healed; the lameness ceases; the milk, which had been lessened to the extent of perhaps one-third less than the ordinary quantity, returns; the animal regains its appetite, and soon recovers the lost condition.

Between this mild form of the disease and the most virulent there are an infinite number of grades, which depend upon constitutional peculiarities and variation of surrounding circumstances. Sometimes the bursting of the vesicles is followed by ulceration and extensive loss of structure. The hoofs slough off, and even the ligaments of joints in the vicinity of the foot become disconnected from the bones, causing open joints. Deep abscesses form in the mammary

gland, the secretion of milk is almost or even entirely suppressed, and the acute disease degenerates into a low fever, which continues for a long time, inducing debility and extreme emaciation, and in some cases ending in death. Several instances of the malignant form of the disease have been seen during the present outbreak. The affected animals have suffered from effusions into the areolar tissue beneath the skin of the legs and some parts of the body; and when the enlarged parts have been punctured the discharged fluids have always been extremely fœtid; great prostration accompanies this form of the malady, and death frequently results. In one dairy in the metropolis 16 cows died out of 86; and the average loss by death up to the present time has reached 10 per cent. in those localities where the disease has been very severe.

Complication of the disease with other maladies is not uncommon, and the fatality which is ascribed in certain instances to mouth and foot complaint is often in reality due to pleuro-pneumonia, congestion of lungs, or disease of the digestive organs, either of which may exist in connection with eczema; it is therefore very necessary in dealing with an outbreak of the disease to separate all those cases which are of a complicated character and require a special method of treatment.

In ordinary instances the duration of the attack is not more than a week, but after the disease has begun to decline there is a period of convalescence of some length, during which the animals suffer from debility. When the appetite is quite restored the improvement is very rapid, and as in the case of febrile diseases generally the recovered animals thrive more than the healthy beasts which are placed under similar circumstances of feeding and management.

A second attack of the disease is not an uncommon occurrence. Mr. Priestman had under his care in 1868 some cows at Islington which were affected twice with eczema at an interval of about four months; several similar instances have also been observed, and some animals have been known to suffer a third time from the disease. A cow belonging to Professor Simonds was attacked three times, and Mr. Thomas Duckworth (cattle salesman) had two steers which were affected while in his possession, the first time in November, again in April, and a third time in August. On the contrary, experiments which have been made to determine this point have frequently been followed by the opposite result, recovered animals placed with diseased beasts having resisted the infection completely. It is probable that in many

instances this immunity continues only for a short time, and the evidence of the recovered animal's susceptibility to a second and even a third attack is of so positive a character that no reasonable doubt of the fact can be admitted.

Although mouth and foot disease is not in its ordinary form a fatal malady, an animal affected with it in its virulent form is a pitiable object; and there is no doubt that the amount of suffering endured is often excessive from the partial separation of the hoof and the extensive excoriations of the membrane of the tongue and mouth. Even when the vesicles are neither numerous nor large there is often present an irritable condition of the mucous membrane accompanied with exudation beneath the epithelium, causing it to become loosened and fall off, leaving the sensitive parts exposed. A painful instance of this accident occurred a short time ago; while the attendant was endeavouring to secure a diseased animal's tongue in order that it might be examined, the entire cuticular covering of the anterior part of the organ came away in his hand, leaving the bleeding membrane exposed and causing the animal to tremble with pain.

Owners of stock have not hitherto estimated mouth and foot disease as a serious infliction; or, if they have, their calm endurance has been almost stoical in its character. If a tithe of the energy which was displayed in extirpating the cattle-plague had been directed to the eradication of the mouth and foot complaint, we should long since have ceased to regard it as one of the inevitable disabilities of grazing and dairy farming.

To prove how great a loss is constantly being sustained in consequence of the ravages of this malady, it is only necessary to refer to its effects. First, there is the diminution of the quantity of milk, which varies according to the severity of the attack. A good milker, in the worst stage of the disease, will, perhaps, not give more than a quart of milk for a day or two. In one instance, a dairyman with 15 cows, all of which were suffering from the disease, obtained in one morning's milking only 15 quarts from the whole number.

The general loss of milk, however, in a large dairy, under ordinary circumstances, will vary from one-third to two-thirds throughout the progress of the disease. When the affection is very virulent, a much greater loss will be sustained. Again, the deterioration of quality of milk, and its poisonous action upon young animals, are even more serious than the diminution of quantity.

Loss of condition is another ill consequence which affects the grazier even more than the dairyman. The excessively

infectious character of the disease and its rapid extension to nearly all the animals on a farm—cattle, sheep, pigs, and poultry—must also be placed among its objectionable peculiarities, and the list is completed by the addition of certain sequelæ, which often render valuable animals entirely useless: for example, loss of hoofs, sloughing of ligaments, mortification or induration of the udder, or a portion of it, inflammation of the tongue (glositis), and sometimes induration of that organ. In fact, taking a comprehensive view of all the circumstances, it may be asserted with truth that no disease of the lower animals is more deserving of serious attention than is the mouth and foot complaint.

Treatment of Mouth and Foot Disease.

Modern therapeutics have one essential principle of action which elevates the science far above its original condition,—the principle of avoiding unnecessary interference. Older physicians seem to have been impressed with a belief that it was incumbent on them to oppose every indication of disease by inducing a contrary condition. Modern medicine has made the discovery that what appears to be the result of disease is often the indication of a natural cure, and therefore to be encouraged rather than interrupted. Some diseases, and especially those of the class to which mouth and foot disease belongs, have a natural method of progress towards recovery which can scarcely be with safety accelerated, but which may be easily retarded by the injudicious employment of remedies. So long as the disease advances regularly through its several stages, chemical agents are more likely to be injurious than beneficial; and beyond supporting the system by the administration of aliment adapted to the enfeebled nutritive functions, and keeping the diseased animals under the most perfect sanitary conditions, the medical attendant is powerless for good, but terribly potent for evil.

Unhappily for the lower animals, the modern idea of medicine has not reached the minds of those to whose hands farmers still elect to entrust the treatment of their stock, and who are in the habit of perpetrating surgical and medical barbarisms which ought to be impossible among an intelligent people. It is not without stern reason the writer asserts his conviction, that taking into consideration the ignorance which prevails among those who have most to do with the diseases of animals, an edict which should prevent henceforth and for ever the administration of a grain of any non-

alimentary substance to a sick beast would be a vast boon to the stock-producing interests of this country. Applying the principles which have been advocated to the treatment of mouth and foot disease, it is obvious that at first all medicine should be withheld; the animal should be supplied with soft food, succulent grass, pulped roots, mashes of bran and linseed, or thick gruel. No attempt, unless under competent direction, should be made to open the mouth, or to horn down any fluids, alimentary or medicinal. If the fever is very severe, an ounce of nitrate or bicarbonate of potass may be dissolved in the drink-water, and a solution of the first named agent, 1 part to 40 parts of water, may be syringed over the feet frequently, for the purpose of keeping them clean and cool. Bleeding and purgatives are absolutely deadly: even mild laxatives, which do no harm, are of questionable utility; and the use of powerful astringent, styptic, and caustic lotions to the sore mouth amounts to unmitigated brutality.

As an antiseptic remedy, hyposulphite of soda has been much advocated in this and other infectious diseases, and has the positive merit of being innocuous; the administration of 4 to 8 ounces daily of this neutral salt in the drink-water may advantageously take the place of more active measures. The writer's experience, however, does not enable him to speak in its favour as a preventive of infection.

Under the system of treatment suggested, and which is of the least obtrusive character, the sick animals, in the majority of instances, will progress favorably towards recovery. Under unfavorable circumstances of locality, atmospheric conditions, or state of constitution, the malady may assume a virulent type, and in that event the aid of the scientific veterinarian is required. Sloughing of tissue will be met by the use of antiseptic lotions, among which solutions of chloride of zinc, carbolic acid, and tannic acid are most effective. Carbolic acid or chloride of zinc is best adapted for application to the feet, and tannic acid for the mouth. A solution of one ounce of tannin to a gallon of water will be sufficiently strong; and a little of this fluid poured gently into the mouth, and allowed to run to the back of the tongue, will allay irritation and protect the excoriated surface by coagulating the albumen of the secretions.

Tonics and stimulants are necessary when the disease assumes a low form, and they are best administered mixed with the food. Salts of iron, stout, and brandy may be employed with advantage in these cases, but, under good management at the commencement, it will rarely be neces-

sary to give any other tonics than properly prepared and nutritious food.

Preventive Measures considered in reference to the Origin of the Disease, and its Rapid Progress among Animals exposed to the Infection.

Sanitary regulations of the most stringent character are necessary in respect of mouth and foot complaint, in consequence of the short period which elapses between the time of infection and the declaration of the disease, which allows but little oportunity for the action of prophylactics. The means which are available for the purpose of arresting the spread of the affection have reference to the introduction of diseased animals either from the Continent or from any part where the affection may prevail, and the regulation of the movement of such animals; with the establishment of a system of isolation and disinfection. It is obvious that the first essential is the separation of diseased or infected animals on the premises where the affection exists. Considerations of convenience or profit have no place whatever in a discussion of the sanitary aspect of the question, and it is idle to attempt to reconcile things which in their nature are opposed. It may be true, at least need not be disputed, that restrictions upon the free movement of animals are inimical to the interests of commerce; it is, on the other hand, absolutely and demonstrably true that free movement of infected animals means unlimited extension of disease. The present inquiry does not refer to the best means of extending the cattle trade, but to the most certain method of preventing disease, and the argument cannot conveniently be encumbered with collaterial considerations, which are foreign to the main issue. Isolation of all diseased and infected animals in the locality where the disease is detected is the first necessary precaution, in the neglect of which all others are ineffectual. This measure involves detention of all infected cargoes at the landing-places, and of all animals in fairs and markets, where an outbreak occurs. Movement in any direction along roads, rivers, or railways, for any purpose, must be associated with the propagation of the infection to a greater or less extent, depending upon the precautions which are used. The practical difficulty in the case of eczema arises from the suddenness of the attack. Animals which leave the premises of their owner in perfect health may, in two days from that time, be the subjects of the disease; and if they are store stock, it will entail considerable loss upon the owner to cause them to

be slaughtered; and it may not be practicable to detain them in an isolated place until they recover. It must, however, be distinctly enunciated, that by just so much as the severity of the necessary precautions is relaxed, the danger of the spread of disease is increased. All fresh stock should be kept away from other animals on the farm for at least four days, which will be sufficient to prove whether or not they are infected with eczema.

Persons in attendance on diseased animals should not be permitted to approach healthy stock, and the same precaution should be insisted on in reference to fodder and other substances which have been near animals affected with the disease.

On premises where the disease exists, disinfectants should be freely used, and the most exact care should be exercised in removing all excreta, which should be mixed with quicklime in equal proportions. The selection of the method of disinfection is probably of less importance than the previous adoption of a complete process of cleansing sheds and places where diseased animals have stood, by means of washing with hot water, containing common soda in solution, after which, carbolic acid, chloride of lime or zinc, or sulphurous acid gas, may be employed to complete the process. The question of the prophylactic efficacy of a separate foreign market for all imported animals was considered in a former essay with reference to the prevention of the introduction of foreign diseases of animals, and it is sufficient now to remark, that at the outports the arrangements which have been in force for some time for the reception and slaughter of all foreign cattle, landed in a defined area, have not proved sufficiently protective against the spread of infection, as the mouth and foot disease has in more than one instance extended from the defined parts of those ports where diseased cattle have been landed, to healthy stock in the neighbourhood.

The provisions of the Contagious Diseases (Animals) Act, if properly carried out, will go far to arrest the spread and if vigorously carried out might even lead to the extermination of eczema and other infectious diseases, but it is only by the willing co-operation of those who are concerned that any legislative enactment in relation to the prevention of disease can be effectively carried into operation. There remains one measure, which will probably be deemed quite impracticable, but which would nevertheless tend more than any other to the extinction of contagious diseases, and greatly aid in the mitigation of unnecessary suffering,—the general adoption of

a system of traffic in dead meat instead of living animals. The idea is of course chimerical, but rapid development of ideas is a characteristic of the present age, and there are people now living who have seen greater changes actually effected.

WATER SUPPLY OF LONDON.

Dr. Letheby in his report says, the chemical composition of the metropolitan water has not fluctuated to any considerable extent; for that derived from the Thames and the Lea has contained from 21 to 23 grains of solid matter per imperial gallon during the winter months, when the rainfall is the greatest, and from 17 to 17·5 grains per gallon in the summer, when it is least, the average for the whole year being about 19·3 grains per gallon, of which about 14·2 grains are calcareous salts, giving that degree of hardness to the water, the hardness being reduced to about 3·8 degrees by boiling the water for a quarter of an hour. The proportion of common salt in the water does not exceed 1·8 grains per gallon, and the organic matter, as estimated by the oxygen required to oxidise it, is not above two thirds of a grain per gallon. The nitrogenous matter also is remarkably small, ammonia being in the proportion of only one part to about 35,000,000 parts of water, and the nitrogen, as nitrates, &c., as one to 630,000 parts. The water supplied to the public is for the most part clear and colourless; on one occasion, however, during the year, it was slightly turbid in the case of the Grand Junction water; on two occasions with the Southwark and Vauxhall water; on four with the Lambeth; and on six with the Chelsea. The daily supply of water to the metropolis has ranged from 91,578,341 gallons per day, in the month of January last, to 110,094,058 gallons in the month of July, the average for the whole year being rather more than 99 millions of gallons per day, or 31·2 gallons per head of the population. The daily supply to Paris averaged 24·6 gallons per head of the population; but this includes the water supplied to the public fountains, &c. The number of houses supplied daily by the water companies of London is about 463,000. Rather more than half of the water is obtained from the River Thames at Hampton, and the rest is from the Lea, and from springs and wells in the chalk. The filtering of the water is generally very effective. I have remarked that, except in special cases, water of moderate hardness, like that supplied to the metropolis, to Paris, and

Vienna, is always preferred, and is best suited for domestic purposes, because of its being brighter to the eye and more agreeable to the taste. So satisfied, indeed, were the French authorities on this head, that they passed by the soft waters of the sandy plains near Paris, and went far away to the chalk hills of Champagne, where they found a water which is even harder than that supplied to London. One important consideration which strongly influenced them in their decision was the fact that more conscripts are rejected in the soft-water districts, on account of imperfect development and stunted growth, than in the hard; and they conclude that calcareous matter in water is essential to the formation of tissues. In this country, also, it is remarkable that, wherever soft water is supplied to the people, the mortality is large, even when allowance is made for the birth-rate of the place. Glasgow, for example, as well as Preston, Dundee, Sheffield, Plymouth, Manchester, Bradford, &c., which are all supplied with water of less than 4 degrees of hardness, have a mortality which ranges from 26 to 34 per 1000, while at Birmingham, Bristol, Sunderland, Newcastle-on-Tyne, Wakefield, Dover, Norwich, Croydon, Worcester, Derby, and other places, where the waters are hard, the mortality is considerably less; in fact, it may be said that in towns supplied with water of more than 10 degrees of hardness, the average mortality is about 22 per 1000, while in those supplied with softer water it is about 26 per 1000. It may well be, as the late Professor Johnston observed, that "the bright sparkling hard waters which gush out in frequent springs from our chalk and other limestone rocks are relished to drink, not merely because they are grateful to the eye, but because there is something exhilarating in the excess of carbonic acid they contain and give off; and because the lime they hold in solution removes acid matters from the stomach, and thus acts as a grateful medicine to the system. To abandon the use of such a water, and to drink daily in its stead one entirely free from mineral matter, so far from improving the health, may injure it. The water of a country may determine the diet of its inhabitants. The soft water of the lakes of Scotland may have had much to do with the use of brown meal; and but for the calcareous waters of Ireland the potato could not have become a national food. Looking at the plain teachings of all this, and considering the excellent quality of the water supplied to this metropolis, it would be folly, in my opinion, to change it for a soft water. On the other hand, it is quite possible to have an excess of calcareous and other saline matters, as is the case with the well waters of

this city, where the proportion ranges from 48 to 120 grains per gallon. Dr. Letheby concludes with a report of the sanitary work done in the city during the year.—*The Journal of the Society of Arts,* February 11th, 1870.

MARKETING THREE HUNDRED YEARS AGO.

The art of marketing, like many other useful and old-fashioned customs, is nearly extinct, and if it exists at all, it is only in some little country town to which railways have not yet penetrated, and where local boards of health and inspectors are unknown. In these primitive sleepy hollows (and there are still a few left) the country people meet once a week, not in a bran new market house, with iron railings and an elaborate drinking fountain, but *sub jove* as their fathers did before them, when the same provincial dialect is heard, and probably the same local jokes and proverbs as went the round a hundred years ago.

One feature, however, has certainly not died out, and that is the spirit of bargaining, which is half the fun of the fair, and which appears to be indigenous to the market woman, and, to a great extent, to the customer. Young ladies of the present day, if they ever did such a thing as go to market, would probably pay down what was demanded without cavil; but our grandmothers would have scorned the action. It was perfectly understood on both sides that the beating down was a part of the performance, and if a few personalities could be delicately introduced, so much the better.

Market day in the country, however, was not only the great gossip day which had to last the whole of the week, but was the only opportunity which housekeepers had to lay in their stores of meat, poultry, eggs, and such like perishable commodities. Now-a-days, the number of shops opened in the smallest towns has very much curtailed the general business, which nearly three hundred years ago was a serious affair, as the following bill will show; it is that of a gentleman's household in 1600:—

	£	s.	d.
To a chine of Beef weighing 12 stone	0	18	0
Twelve Neats' Tongues	0	12	0
Two dry Neats' Tongues	0	4	0
Leg of Mutton	0	1	10
Nine Capons	1	2	0
Ten good Wits (probably Plovers)	0	8	0
Six House Pigeons	0	4	4

	£	s.	d.
Eighteen Felde Pigeons	0	4	6
Six Rabbits	0	4	2
Half a hundred Eggs	0	2	0
One pottle of fresh Oysters	0	3	0
Two Colleyfloreys	0	3	0
Thirty Lettes	0	0	4
Sixteen Artichokes	0	3	4
Nineteen Oranges and four Lemons	0	1	2
Pineapple Seeds	0	0	9
Orangeades, 2 lbs.	0	3	4
Lump Sugar, 9 lbs.	0	9	0
Nutmegs, 7 ozs.	0	1	9
Synnamon, 1 oz.	0	0	4
Eight gallons Claret	0	16	0
Five pints Caraway	0	2	6
Three quarts Sherry	0	2	0
Three quarts Whight Wine	0	2	6
Butter, 30 lbs.	0	15	0
Eight bushels Wheat	0	2	0
Two hogsheads Beer	1	4	0

In looking over these items, we are struck with the excessive cheapness of some articles as compared with others, although it must be remembered that money in those days was dearer, and that population was scanty, and, therefore, there was but little demand. For instance, beef is priced at something over $1\frac{1}{4}d.$ per lb., and mutton about $2d.$ In the sixteenth century the legislature took a very active part in regulating the price of provisions, although it was soon found that such interference became practically a serious evil. The preamble of this act of 1532 is curious. It states "that dearth and scarcetie of good, cheape, and plentie of cheese, butter, capons, hens, chickens, and other victuals necessary for man's sustenance, happeneth, riseth, and chanceth of so many and divers occasions, that it is very hard and difficult to put any certaine prices to any such things; and yet, nevertheless, the prices of such victuals be many times enhansed and raised, by the greedie covetousenesse and appetites of the owners of such victuals, by occasion of ingrossing and repeating the same, more than upon any reasonable or just ground or cause, to the great damage and impoverishing of the king's subjects." By a proclamation of Henry VIII the butchers of London were empowered to sell as follows:— Beef and pork at $1\frac{1}{8}d.$ per lb., mutton and veal at $\frac{3}{4}d.$ per lb., This tariff was altered soon afterwards to:—Beef not to exceed $\frac{5}{8}d.$ per lb., mutton $1d.$, veal $1d.$ per lb. Lamb, however, was a luxury, for best lamb was $2s.$ per lb., second lamb $1s.$ $8d.$, and meanest lamb $1s.$ $4d.$

Eggs at $2s.$ the half hundred cannot be considered dear, though they were considerably cheaper some seventy years

previous to this date, when Henry VIII rooted out the monasteries. There is a curious old Percy ballad extant which imputes all the evils of dear provisions to this measure. It is written in broad Somersetshire dialect :—

"Chill tell thee what, good vellowe,
Before the vriers went hence,
A bushel of the best wheate
Was zold vor vorteen pence;
And vorty egges a penny,
That were both good and newe."

Nor can it be wondered at that they were so cheap, seeing that in the previous century a hen was only $3\frac{1}{2}d$, and a goose $3d$.

Perhaps the most extravagant price in the marketing bill are those of cauliflowers (colleyfloreys) and artichokes, but they had only just been introduced and were considered as great rarities, which, in a general way, were only found on royal or noble tables. Potatoes were equally considered as delicacies, not to be obtained by the vulgar herd. The same thing may be said of the sugar, which at $1s$. per lb. would not be in general use. As early as the fourteenth century it is mentioned, but only as a luxury, which it continued to be down to the reign of King James.

The fishmonger's bill in those early times was even smaller than the butcher's or the vintner's. A list of prices put forth in 1274 tells us that a plaice cost $1\frac{1}{2}d$., twelve soles $3d$., mullet $2d$., conger eel $1s$., turbot $6d$., dorae $5d$., mackarel $\frac{1}{2}d$., (though in Lent they rose to $1d$.) twenty pickled herrings $1d$., twenty-five eels $2d$., 100 smelts $1d$. Surely with such prices as these, Friday ought to have come every day in the week, and a fish dinner could be supplied at a considerably lower rate than one gets it even at Simpson's.

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

Annales de Médecine Vétérinaire, Sept., Oct., Nov., and December.

EXPLORATION OF THE METACARPAL ARTERIES TO ASSIST THE DIAGNOSIS OF FOOT LAMENESS IN THE HORSE.

By F. Defais, Clinical Professor at the Veterinary School, Brussels.

The author says that every objective symptom is an important acquisition to veterinary medicine, and the more so

when applied to an organ protected by a horny box which renders the examination long and difficult.

When a lame horse is submitted to examination the first thing is to ascertain the lame limb; after which the lateral artery of the affected limb is to be explored; if it is distended, and the pulsation more easily felt than in the corresponding leg, we are by this means convinced that the affection is in the foot, the shoe must be removed and the foot examined; and it very seldom happens that the cause is not discovered. Almost daily we have to examine horses in which the pulsation of the lateral arteries indicate the affection to be in the foot, but in which the examination of the foot is declared to be useless, the lameness being supposed to be in the leg, and even several examinations having been fruitless, when with a little persistence and renewed examination the lesions are found in the foot which explain the cause of the lameness. In this manner we have been able to discover horses having been pricked in shoeing, separation of the sole, cancers, &c., in horses which had been considered lame from sprained fetlock, &c. We also use this mode of exploring the lateral arteries, to judge of the modification produced by the treatment without moving the horse out of the stable.

We have endeavoured to extend this discovery to the diagnosis of disease in the ox tribe, but the disposition of the blood-vessels and their division have not enabled us to detect the slightest variation in the pulsation of the metacarpal or metatarsal arteries in animals that suffer considerably from supuration, and ulceration, consequent an eczema.*

CANCEROUS GROWTH ON THE PENIS.

By M. Suykerbuyck.

This case was in a gelding about twenty-five years old, belonging to a riding master at Antwerp. There had been for the last two years a fœtid discharge from the penis. The owner had almost decided to have the horse killed, but being handy for the instruction of young pupils in the riding school, he submitted him to the examination of the author. The collateral information was that two years ago a horse had been killed which had an affection of the penis, after which several horses in the same establishment became

* There is nothing new in this, as it is the general practice to explore the lateral arteries in all cases of lameness in well-bred horses; in cart-horses it is very difficult on account of the thickness of the skin.

affected; this was attributed to the same sponge having been used to the different horses. All the horses got well with the exception of the one in question, in which the discharge became more consistant, purulent, and fœtid. At the end of a few months the penis began to swell, pustules, and abscesses formed, and afterwards divers excrescences of cancerous aspect, which gave the extremity of the penis the appearance of a cauliflower. The urethra had remained in a healthy state, while the urethral mucous membrane was salient and very red.

Cauterisation had been frequently applied by a castrator, but instead of diminishing in size the enlargement had increased.

There being no chance of reducing this tumour, amputation was, with the consent of the owner, decided on. A tube made of tin was introduced into the urethra to beyond the affected parts; this was kept in its place by an assistant, a ligature was then applied, and the whole of the diseased part was removed by the knife. The weight of it was one and a half kilog. (about three pounds). The operation was thus performed on the 30th of June; on the 5th of July the parts comprised in the ligature were nearly mortified; a fresh ligature was applied; the state of the animal was much improved. On the 9th the tube and ligature were removed.

On the 23rd the animal was attacked with colic; micturition was difficult. The stump was cicatrised, but there was a considerable contraction of the urethra at its external orifice. A simple section with the scalpel remedied this, and restored the flow of urine. The cure was complete on the 28th of August. Two months after the horse won a trotting match.

FRACTURE OF THE POSTERIOR MAXILLARY.

A mulet (entire), approaching a mare, received a kick which fractured the anterior extremity of the maxillary; the fragments were only held by the mucous membrane. Having successfully replaced the broken parts, they were kept in position by a silvered copper wire fixed to the middle incisor teeth. By this means union of the bones speedily took place.

A foal, eight days old, had a contracted tendon of the off foreleg. It walked on the front part of the fetlock. Subcutaneous tenotomy was performed; both the flexor extern and Achili tendons, as well as the suspensory ligament, were divided, the parts being maintained in position by an im-

movable bandage. Five weeks after the apparatus was taken off; the sections were closed by cicatrix. The foal has since been visited several times. There is no trace of the affection, except that the extension of the fetlock is a little more developed than that of the corresponding leg.

ECZEMA EPIZOOTICA.

By J. B. Dessart, Government Veterinary Surgeon.

Aphtha epizootica has this year been generally very benign. The animals attacked present nothing particular in the different phases of the development of the exanthema. However, there is a remark which I had already made on a former attack, and which, no doubt, has also been made by others, and which is in contradiction of what has been written on the subject by most eminent authors, viz. that instead of being inclined to drink, nearly all the animals refuse all fluids, either hot or cold, up to the period of the decline of the malady. I always order water, with a little meal (*eau blanche*), to be put within the reach of the sick animals, so as to enable them to refresh the buccal mucous membrane *ad libitum*. But the observation generally is that this is useless, as the animals do not drink, and the experiments generally made in my presence confirm it. In the course of the present epizootic I have had many opportunities to verify the correctness of these observations it is an important symptomatological point, which seems in contradiction with the general symptoms of fevers.

The author says that he has advised and practised inoculation of the malady, without, however, giving the *modus operandi*, on all the cloven-footed animals, in cases where the malady had declared itself on one or two of them. This practice has the double advantage of—first, that the malady is in general almost harmless when thus communicated by the hand of man; second, that all the animals have it at the same time, and the proprietor gets rid of it much sooner.

Treatment.—It suffices in general to submit the affected animals to a soft diet, and, if possible, gargle their mouths with a lotion of vinegar and water, three parts of the latter to one part of the first, keeping the sick animals clean, and provided with good litter, and in the course of eight or ten days the cure will be effected. In some cases the animals suffer from ulcers in the feet, caused by travelling or fatigue when worked; in those cases I have prescribed poultices, and, after the disappearance of the inflammatory symptoms, astringent lotions, viz. sulphate of iron one part, water six

parts. In one stable, containing three cows, the author prescribed sulphate of soda internally to remove costiveness.

The author submits that the treatment to oppose to an epizootic, such as the aphthungular fever, ought to be simple, of easy application, and inexpensive, the loss of milk and also of condition being already very considerable, without the addition of the medicaments.

The malady has been characterised mostly by the eruption of vesicles in the mouth and feet; cases where it was limited to the mouth and nostrils have not been common. The simultaneous appearance of the exanthema in the mouth, mammary gland, and feet, has been very rare, the author having only observed it in five cases. From the whole of the facts, observed during the prevalence of the epizootic, the conclusion is that aphthous fever is an infectious malady, developed through the influence of a miasma of an unknown nature, attacking a certain number of animals in an undetermined space of country, and propagated from one animal to the other by contact.

DE LA FIEVRE APHTHEURA,—FOOT AND MOUTH DISEASE.

From a report of the last quarter of 1869 of M. Contamine, Government Veterinary Surgeon, Province of Hainaut.

The aphthungular fever, as the author designates it, appeared in the Canton of Peruwelz in the beginning of September. The first cases occurred in a hamlet on the outskirts of the town of Peruwelz, which was situated altogether away from the main roads. As to the three cows, the property of a cultivator, which were attacked, they had never been off his land, and were reared on it; they were affected spontaneously, without any known cause, the malady being unknown in the surrounding villages. The next day the malady broke out in another dependence of Peruwelz, quite on the opposite side, and three kilometers distant from the former. There, also, the malady was unknown in the neighbourhood. The cows in these stables were soon perfectly cured, thanks to the treatment recommended, when the malady reappeared with extraordinary intensity in the cow-sheds of the first hamlet, sparing here and there a shed to invade others beyond them. From that time it was observed that the malady attacked some farms in certain villages, while others intermediate escaped, to return afterwards and attack those which seemed to have been forgotten.

These facts, the author says, seem to confirm the opinion expressed by him in 1861 in his reports, since shared by

other veterinarians, principally by the late Dubois of Iodoigne, that the malady (*stomatite aphtheuse*) is determined by a specific agent of an unknown essence in the air, or, in other words, by a miasmatic development, producing an affection which afterwards becomes contagious, attacking not only animals of the same species, but also those of other species.

If the principle of the malady is in the atmosphere, we cannot, by sequestration, protect animals from its influence; hence, we cannot depend on government measures to prevent its development, as has been forcibly pointed out by the late Professor Verheyen. He said the government cannot control the elements, or sequestrate the miasma contained in the air; it must, therefore, be left to those most interested to mitigate the evil.

Inoculation which is also recommended by superior authority is not a preservative, the only advantage derived from it is to provoke the malady artificially which is by that means of greater benignity, as almost always the eczema is confined to the mouth. Amongst the symptoms which the author avers are sufficiently known, there is one which has not been described by any author, viz., the phlyctenæ on the conjunctiva which cause intense inflammation of the mucous membrane accompanied by lippitude and epiphora.

I have also observed, the author states, on three cows, that form of the malady which M. Zündel of Mülhause designates catarrhal, of which mention was made a few years ago by M. Laridan of Bruges and M. Macorps, Sen. of Huy; this form of the malady is often mortal, particularly in young animals. The symptoms are numerous: confluent aphthæ on the muzzle, lips, gums, and even in the nostrils, on the tongue, feet, and mammary gland, with a tendency to ulceration; the mucous membrane is of a yellow-reddish colour, there is an abundant salivation, thick and viscid, more or less difficulty in the respiration, loss of appetite, intense thirst, diarrhœa, grinding of the teeth, fœtid odour from the mouth, arising from the putrefaction of the saliva; the animals fall away visibly; as the proprietor expresses it, they "melt away at sight."

The author has inoculated the malady at the muzzle, with the fluid from the phlyctenæ on the toothless gum of the upper jaw, by means of a double-edged knife, *feuille de sauge*, in the same way as he inoculates for pleuro-pneumonia; and well-developed vesicles have appeared at the spots of the incisions. He has also with success employed the method practised by M. Masson de Dour; viz., by taking the tongue

of a diseased animal with one hand, and introducing the other into the mouth, and collect as much of the saliva as possible, and introduced the hand thus charged with the virus into the mouth of a healthy animal, principally bringing the hand in contact with the inferior part of the buccal cavity, the epithelium of the mucous membrane being of less density than that of the upper part.

The author observes that this year he has seen no case of transmission of the aphthungular malady to sheep, swine, or to the human subject, as he had observed in 1861. Is this to be attributed to the recommendation of not using the milk, except it be previously boiled?

The use of the milk must be interdicted altogether when the udder and the teats are affected; and he refers the reader to the experiments of the late Professor Delafond, on the milk of cows affected with this malady.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF THE COUNCIL, HELD JAN. 26TH, 1870.

PRESENT:—The President; Professors Spooner and Brown; Assistant-Professor Pritchard; and Messrs. Cartwright, Field, Fleming, Harrison, Moon, Pritchard, Wilkinson, Withers, and the Secretary.

The President in the chair.

The minutes of the previous meeting were read.

Professor Spooner considered the words "*ex-officio*," as applied to those members of the Court of Examiners who are professors in the Colleges, as useless and wrong. A professor at one school, being a member of the Examining Board, might attend and assist in the examination of the pupils from other schools than his own. Though it would be bad taste to do so, it might legally be done. The charter only prevented their interfering as examiners of the pupils educated by themselves.

The President: Then in future what we have been in the habit of calling *ex-officio* examiners must be called examiners.

Professor Spooner also complained that not one word had been said in the minutes relating to the interview of the deputation with the authorities of the Scotch schools (much having been omitted in order to save time), respecting the steps which had been taken at the Royal Veterinary College in order to secure a proper preliminary examination.

This was a most unjust suppression. The London College had acted as the pioneer in this matter, and its efforts ought to have been alluded to.

The President said he alluded to what the London College had done in his remarks to the Edinburgh authorities, before the statement of the views of the Council was left with them. His words were, "I may further inform you that at the London Veterinary College for the last five years, and at the Glasgow Veterinary College for the last two years, a preliminary examination has been adopted with the best results." These words appeared in the minutes.

Professor Spooner asked if what the President had said about the London College appeared in the minutes in connection with the whole report.

The President assured him they did.

Professor Spooner: Then I am satisfied.

The minutes were then confirmed.

The Secretary read a letter which had been received from Dr. A. S. Taylor, Chairman of the Board of Examiners for London, in which he expressed his concurrence in the resolution of the Council respecting the re-examination of rejected candidates.

A letter was also read from Dr. Dunsmure, of Edinburgh, on behalf of the Scottish section of the Board of Examiners, acknowledging the receipt of the letter from the Council containing the resolution respecting the re-examination of rejected candidates.

Professor Spooner thought when a pupil was rejected it should be left to the examiners to say how long he must attend to his studies before appearing before the Examining Board the second time. The Court of Examiners years ago used to do so. A pupil might acquit himself so badly that he would require another twelvemonth's study, and yet at present, if a pupil failed in May, he regarded it as a matter of course that if he attended the lectures he might present himself for examination for the diploma of the College again at Christmas.

Mr. Wilkinson said this matter had been before alluded to, but it was considered that it should be left to the professors, as the Board of Examiners had no power over the students until they presented themselves for examination.

Professor Spooner said it would, at any rate, be well if the examiners would suggest to the teachers the length of time which they considered it necessary that a rejected pupil should apply himself to study before again coming before them. He did not know what was the practice in the Scotch

schools, but at the London College a rejected pupil was expected to pass a preliminary examination again. Some of the rejected pupils had considered that they were at liberty to make use of the first certificate to admit them to a subsequent examination without undergoing a further examination on the part of their teachers. This was very objectionable, because a young man who failed in May might actually be even more ignorant at the Christmas examination. He had known instances of this kind. All the schools ought to re-examine the rejected pupils.

Mr. Wilkinson said he knew that in Scotland, unless the preliminary examination was passed, no certificate was given. Professor Dick's refusal to grant certificates to some pupils who failed at that examination at one time led to considerable difficulty.

The election of two members of the Scottish section of the Court of Examiners, in the room of Mr. Wm. Cockburn, resigned, and Mr. John Lawson, deceased, was then proceeded with.

Mr. Wilkinson: With your permission I will name two gentlemen whose eligibility for this appointment I have taken some trouble to ascertain. At the last meeting of the Council the gentlemen belonging to Scotland who are working with us expressed their anxiety that the Council should elect Scotchmen, that is, graduates of Scotch schools. The two gentlemen whom I am about to name are, to all intents and purposes, as eligible as can be, and though I do not for one moment lay it down as a principle by which we should be governed at all times, that the members of the Scotch Board should be Scotchmen and those of the English Board Englishmen, still, as we are now in a state of transition, when a better feeling is prevailing, and when there is a likelihood of removing obstacles which have held back the profession for the last twenty years, I think we ought to meet the wishes of those who so strongly expressed themselves on the subject.

The first gentleman I wish to name is Mr. Alex. Robinson, of Greenock. He is now a member of the Board of Examiners of the Highland and Agricultural Society. He is a gentleman who has been very strong in his sentiments and feelings in favour of Scotland and the charter; but I am happy to say that, after a little explanation and argument, he is now prepared to resign his post at the Board of the Agricultural Society, and to become a member of our Examining Board.

Professor Spooner: Is he a member of the corporate body?

Mr. Wilkinson: Yes. This movement has originated in the Clyde Street School, and I am quite sure his election will be a means of helping us to acquire that solidity and unity which we have been seeking for so long a time. It will be a most popular appointment.

The other gentleman whom I propose is one of great respectability, practising in Dumfries. He is, indeed, a gentleman of independent means, and one who is looked upon as quite an authority in his county; nay, not only so, but throughout the whole of Scotland. It is Mr. Paterson, of Dumfries. He has been pointed out by some of our Scotch friends who have gone with us thoroughly, and I understand his appointment would give great satisfaction to the Scotch people. Both these gentlemen are in every way eligible, and by their election, especially by that of Mr. Robinson, I think we should be gaining a great step in furtherance of our ultimate object of union. I therefore first propose Mr. Alexander Robinson, of Greenock.

Professor Spooner: When did he obtain the diploma of the College?

Mr. Field: In 1849, April 25th.

Mr. Harrison seconded the motion.

Professor Spooner said, as these elections were, in reality, made for life, great care should be taken in the selection of proper men.

The Chairman said Mr. Robinson occupied a very high position in the veterinary profession in Scotland.

Mr. Fleming: I knew him years ago, and from what I have since seen and heard of him I am quite sure he is everything that Mr. Wilkinson has described him to be.

Professor Spooner said he had been written to by one of the teachers in Scotland, who recommended a Mr. Waters as an efficient man for the post, and added that Miss Dick was also in favour of the appointment. He (Professor Spooner) had made some inquiries, but he had not heard that which would induce him to vote for Mr. Waters.

A ballot being taken; Mr. Alexander Robinson, of Greenock, was declared unanimously elected.

Mr. Wilkinson next proposed the election of Mr. R. B. Paterson, of Dumfries, as the other Examiner for the Scotch Board.

Professor Spooner: When did he become a member of the corporation?

Mr. Field: In 1840.

Mr. Wilkinson said both the gentlemen he had proposed

had consented to act if the Council did them the honour of electing them. His information regarding Mr. Paterson was obtained chiefly from the Principal of the Glasgow College. He had also heard a favorable opinion expressed from the school in Edinburgh. Mr. Robertson, of Kelso, had spoken of Mr. Paterson in the highest terms.

Professor Spooner said he hoped it would not be drawn into a precedent that, when vacancies occurred in the Scotch Board, they must necessarily be filled up by Scotchmen. Professor Simonds had suggested to him that Mr. Wilkinson, of Newcastle, would be a very eligible man. The question was, would it not be better for the Council to elect a man whom they all knew, instead of groping in the dark? He thought Mr. Wilkinson would be a very able man to appoint, but still he had no objections to offer to the motion before the Council.

Mr. Wilkinson said that Professor Simonds had also mentioned the same gentleman to him. No doubt he would have been a very eligible person, but, under the present circumstances, it was desirable that Scotchmen should be appointed.

The President said he had received letters from Glasgow and Edinburgh, in which Mr. Paterson was spoken of as a very superior veterinary surgeon.

Mr. Pritchard seconded the motion.

A ballot was taken, and Mr. Robert Bell Paterson, of Dumfries, was declared unanimously elected.

The appointment of a fresh Trustee for the College funds, in the room of Mr. John Lawson, deceased, was then proceeded with.

Professor Spooner proposed Mr. William Pritchard as a Trustee.

Mr. Fleming proposed Mr. Henry Joseph Cartwright, of Wolverhampton.

Professor Brown seconded Professor Spooner's motion.

Mr. Fleming thought it was not judicious to have all the Trustees residing in London. That was the reason Mr. Lawson was elected.

Professor Brown considered it most desirable to have the Trustees near together.

Mr. Harrison seconded Mr. Fleming's motion.

The result of the ballot was—

For Mr. Cartwright - -	6
„ Mr. W. Pritchard - -	5

Mr. Cartwright was therefore declared duly elected.

The Secretary then proceeded to read the following Report from the Examination Inquiry Committee, on the mode of conducting the practical examinations of candidates for the diploma of the College.

Report of the Examination Inquiry Committee on the mode of conducting the Practical Examination of Candidates for the Diploma of the Royal College of Veterinary Surgeons.

In accordance with the wishes of the Council, your Committee have carefully considered the best means to be adopted to give effect to the proposal, that candidates for the diploma be tested as to their practical qualifications upon the living subject.

The programme may be said to include—

1st. *Examiners.*—This part may at once be disposed of, inasmuch as there are six members of the Board of Examiners, for each section, who will be able to perform this duty.

2nd. *Time of Examination.*—This should be fixed on so as to be followed consecutively by the oral examination; that is, the first twelve pupils should undergo the practical examination either the day before or during the early part of that on which the oral one takes place.

3rd. *The Nature of the Examination.*—It must of necessity be left to the discretion of the examiners as to the various tests which they will resort to. The examination will be in a great measure clinical, technical, and manipulatory, and should especially include the age and soundness of the horse, ox, sheep, and other domesticated animals.

4th. *Place of Examination.*—It is hoped that the authorities of the schools will kindly afford the examiners an opportunity of carrying out this duty within the precincts of the respective establishments, or at some other suitable place.

5th. *Procurement of Subjects.*—This the Council, with the co-operation of the professors, will be able to accomplish through the Secretaries.

6th. *Number of Examiners.*—It is considered that two examiners for horses, and two for cattle and other domesticated animals, will be sufficient.

7th. *Results of Examinations.*—Should a pupil fail at the practical examination, it will be for the Council to determine whether he shall be entitled to present himself for oral exami-

nation before the whole Court. In either event, the examiners must state the degree of excellence which the pupil has displayed to the chairman of Board of Examiners.

8th. *Expenses.*—The expenses incurred in procuring animals, assistants, place of examination, and examiners, to be borne by the Royal College of Veterinary Surgeons.

9th. *Fees.*—For the first year no increase to the examination fee shall be made; but after the first year the examination fee shall be raised to ten guineas.

Mr. Wilkinson asked Professor Spooner if he thought such an examination could be carried out at the examination in April or May.

Professor Spooner said such a course would be a great injustice to the pupils at present in the schools.

Mr. Fleming thought if the students were not in a fit state to pass the proposed practical examination, they were not in a fit state to possess diplomas.

Professor Spooner said such a fundamental change in the system of examination should not be made without previous notice having been given. It would be an act of injustice to require the pupils at present in the schools to undergo such an examination.

Mr. Fleming said any young man about to enter the profession could see by "Bye-Law 29" that he would have to undergo an examination on the principal points connected with his profession.

Mr. Wilkinson stated that the Committee merely brought forward their report as containing suggestions for the consideration of the Council. Some of the best thinkers in the Council had been appointed to deal with this subject, and they had taken a great deal of trouble about it. If Professor Spooner had been present at the last meeting of the Council, he would have known that the Committee were reappointed to give further consideration to the subject, as to the best means by which it could be carried out. They had done so, and now presented their report. He was sorry that Professor Spooner saw any objection to the suggestions of the report being carried out.

Pofessor Spooner said that although, strictly speaking, it might not involve an alteration of the Bye-Laws, yet it was understood by the pupils that the examination was of a certain kind, and it was unjust to alter it without giving sufficient notice.

Mr. Wilkinson said it was understood by the public that when a man obtained his diploma he was qualified to practise. In some instances he had not been so, and, therefore,

the sooner the matter was set right the better. For years Edinburgh had had a practical examination, and the students were required to show their manipulatory skill, and to point out the lame leg, &c., of a diseased animal.

Mr. Fleming said, though failure in the practical examination at Edinburgh did not entirely prevent a student from passing, it went very much against him.

Mr. Wilkinson thought, when a student offered himself for his diploma, he ought to be qualified to do certain things, such as tell the lame leg of a horse and the difference between a cataract and that crystalline-looking substance in the back part of the eye which is supposed (though it is disputed by some) to mark the entrance to the optic nerve. If he was not acquainted with these and similar things, he was not competent to enter upon practice. If he passed in one or two important points, the examiners might look leniently on other matters.

The President said the necessity for the practical examination was most urgent; but the Committee had suggested nothing which a youth about to practise on his own account ought not fairly to be expected to pass. Still, if it would be more agreeable to Professor Spooner that the examination should not be carried out till next year, notice of the change being given in the mean time, he (the President) would be quite willing to agree to such an arrangement.

Professor Spooner thought the Council were out of order in this discussion. The report should be considered paragraph by paragraph, and discussed. A statement could then be drawn out, embodying the views of the Council, and the Bye-Laws could afterwards be altered accordingly, so as to impart the necessary information to the pupils.

The President said he did not think an alteration of the Bye-Laws necessary.

Professor Spooner complained that the professors at the schools had not been permitted to take part in the discussion of the question by the Committee.

The President said, when the Committee was first appointed he moved, and Mr. Cartwright seconded, a motion that the professors should form part of it, but such motion was lost.

Mr. Wilkinson said the Committee considered that the proper way to deal with the subject was to put it into some sort of shape first, and then seek the co-operation of the professors.

Professor Spooner.—I have no objection to that; but these suggestions should not be passed at once into law

to be acted upon, before being submitted to the authorities at the schools.

Mr. Withers proposed "That the report be received."

Mr. Cartwright seconded the motion, which was carried.

Mr. Moon proposed the adoption of the report.

Professor Brown seconded it.

The President read the 1st clause (with regard to the examiners):—"This may at once be disposed of, inasmuch as there are six members of the Board of Examiners for each section who will be able to perform this duty."

Professor Spooner did not think the number sufficient, unless the whole of the six members gave their attention to the practical part.

The Secretary then read the next clause, with regard to time:—"This should be fixed on, so as to be followed consecutively by the oral examination—that is, the first twelve pupils should undergo the practical examination, either the day before, or during the early part of that one on which the oral one takes place."

Professor Spooner said he had long been of opinion that it would be well to augment the number of the veterinary members of the Examining Board. He did not think it sufficient that only two should be appointed. There ought, at least, to be three. He attached great importance to the chemical examination, and thought the Examining Board was admirably filled in that respect, but he could not say the same with regard to some of the other tables.

The Secretary read the 3rd clause, with reference to the nature of the examination:—"It must of necessity be left to the discretion of the examiners as to the various tests which they will resort to. The examination will be, in a great measure, clinical, technical, and manipulatory, and should especially include the age and soundness of the horse, ox, sheep, and other domesticated animals."

The President said he had proposed a plan to that effect, but the Committee thought it would not be treating the examiners with proper respect, and that it would be far better to leave it to their discretion.

Professor Spooner said—I apprehend, when you speak of six members of the Court being competent to perform this duty, you include the presence of the teachers.

The President said of course the teachers might attend as at present.

The 4th clause, with regard to the place of examination, was then read:—"It is hoped that the authorities of the schools will kindly afford the examiners an opportunity of

carrying out this duty within the precincts of the respective establishments, or at some other suitable place."

Professor Spooner said the Council would be running after a "Will o' the wisp," if they expected to make fully efficient veterinary surgeons at twenty-one years of age.

Mr. Fleming said that in 1862 he was present at the practical examination in Edinburgh, and the candidates, as a rule, got through the work rapidly and well. It would not require half an hour to tell whether a horse was lame or no.

Professor Spooner said he did not suppose the Council would place a horse before a student and ask for a general examination as to soundness, &c.

Mr. Wilkinson: What can we leave out?

Professor Spooner said such a course would require a great many days for the examination. There would be sixty or seventy pupils to come up for their diplomas before Christmas.

The President thought an examiner might form an opinion as to the student's practical ability in half an hour.

Mr. Wilkinson said three or four students might be examined at the same time.

Professor Spooner said, if a young man came to a school without any practical knowledge with regard to the management of horses, he could not acquire that practical knowledge at the school unless the present staff was increased three- or four-fold. He had always recommended that young men should be educated by members of the profession before going to College, but the majority of practitioners refused to lend a helping hand. When the professors were engaged in the College yard examining a horse, they could not be shouting out everything with regard to the animal, so that all the students might hear. In many cases, too, the professors did not say publicly what they thought of a horse, for fear of giving offence to those who brought it for examination.

The President said, when the student is aware that he will have to pass a practical examination, he will strive to become familiar with his work, independently of his teaching inside the College. As the examinations are now, it is not, however, a necessity that he should know his work. He himself was never without a pupil, and he knew several other veterinary surgeons who also took pupils.

Mr. Fleming said it was not the intention of the Committee that the examinations should be very severe.

Mr. Wilkinson observed that the Committee anxiously desired the co-operation of the authorities of the different schools, otherwise they could not do justice either to themselves or to the pupils.

The President said the professors in Scotland promised to render every assistance they could in providing suitable places for carrying out the practical examination.

Mr. Wilkinson said he had heard that there would be great difficulty even at Camden Town as far as examining cattle was concerned.

The President: Do you think there would be any objection, Professor Spooner, to hold these examinations at the College?

Professor Spooner: I must decline to answer that question.

The 5th clause, as to the procurement of subjects, was read as follows:—"This the Council, with the co-operation of the professors, will be able to accomplish through the Secretaries to the two sections of the Board."

The 6th clause was then read:—"It is considered that two examiners for horses and two for cattle and other domesticated animals will be sufficient."

Professor Spooner did not think two would be sufficient. The Committee had before said that the veterinary element of the Court of Examiners would be able to carry out the plan; why, then, was it necessary to designate two for each department?

Mr. Wilkinson, in reply, said—Merely to make it possible for two for each subject to form a quorum.

Professor Spooner thought three might be sufficient, but two would not.

The Secretary proceeded to read the 7th clause:—"The results of the examination:—Should a pupil fail at the practical examination, it is for the Council to determine whether he shall be entitled to present himself for the oral examination before the whole court. In either event, the examiners must state the degree of excellence which he has displayed to the chairman of the Board of Examiners."

Professor Brown considered this clause altogether unnecessary. The examination should be taken as part of the general examination.

Mr. Pritchard agreed with Professor Brown.

The 8th clause:—"The expenses incurred in procuring animals, assistants, places of examination and examiners, to be borne by the Royal College of Veterinary Surgeons."

The 9th clause:—"For the first year no increase to the examination fee shall be made, but after the first year the examination fee shall be raised to ten guineas."

Professor Spooner thought the Committee ought to have consulted the various College authorities before coming to

any such conclusion. Some people were of opinion that ten guineas was the highest fee that could be demanded, but he believed the Council had the power to charge whatever they pleased.

Mr. Wilkinson protested against these observavations, because he was quite sure that if the Committee had appealed to the schools before drawing out some plan the answer would have been, "We can give no opinion until you have a plan to lay before us."

Mr. Withers thought the proper course to adopt would be, after the adoption of the report, to appoint some members of the Committee to confer with the authorities of the schools as to the propriety, or otherwise, of any clauses in the report.

The President coincided in this view.

Mr. Wilkinson said, at Edinburgh the authorities said, "Well! we have nothing before us, and therefore we cannot give you an opinion." He therefore would suggest that a fair copy of the report should be made out and respectfully submitted to the authorities of the different schools for their approval or dissent.

Professor Spooner did not think that, even with the increase of fees, the Council would be able to carry out what they proposed. It would occupy too long a time.

Professor Brown saw no reason why the increase of fee should not be embodied in the scheme, as it appeared that there was to be no practical examination in April or May next.

Mr. Wilkinson agreed with this view.

Mr. Withers did not think it would be necessary to add the sum of three guineas.

Professor Spooner thought the education fee ridiculously low. He also agreed that there was no necessity to omit the increase of fee, if the propositions were not to be operative until next term.

Professor Brown proposed, "That the report be adopted, and that the President submit the resolutions of the Committee to the authorities of the various colleges for their consideration."

Mr. Cartwright seconded the proposition, which was carried.

The Secretary next read a letter, dated January 15th, 1870, from Mr. McGregor (agent to the Trustees of the Veterinary College, Edinburgh), expressing a general approval of the representations of the Royal College of Veterinary Surgeons.

A letter was also read from the Secretary of the Council

of the Veterinary College, Edinburgh, dated January 21st, with reference to the subject of preliminary examinations, recommending the appointment of a General Examining Board.

Professor Spooner asked what reply Glasgow had given.

The President said the Principal of the Glasgow College stated to the deputation that he would assent to anything that the other two schools agreed to.

Mr. Wilkinson proposed, "That the letters be referred to the Deputation Committee, with a view to the taking of further proceedings."

Professor Brown seconded this. The proposal was agreed to. By order of the Council,

W. H. Coates, *Secretary.*

IRISH CENTRAL VETERINARY MEDICAL ASSOCIATION.

COLIC AND ENTERITIS IN THE HORSE.

Read by Mr. Malcolm *before the Irish Central Veterinary Medical Association, Dec. 7th,* 1869.

Occupied as I am in a country practice, entailing long and fatiguing journeys, I regret I could not devote that time and study so essential to the production of a good paper; so you must be content with a very inferior one, which, however, I hope will give ample scope for a brilliant discussion.

The diseases I have chosen for consideration are of everyday occurrence; that fact, I hope, will not lower their importance in your estimation, but rather induce you to give them your deepest consideration.

There are no diseases to which animals are subject that are more heartrending to look upon than acute diseases of the alimentary canal. When we come to look upon a poor dumb animal writhing under pain, the seat of which he has no language to tell save by signs, which the experienced man fails not to understand, it is gratifying to know we can afford relief, and the humane man hastens to do it.

Colic, commonly known by the names bellyache, gripes, fret, cramp, spasmodic and flatulent colic, &c., &c., is a disease of the intestines, or that portion of the alimentary canal commencing at the pyloric end of the stomach, and terminating in the anus.

The intestines are divided into large and small.

The small intestines, which are seventy-two feet long, are again subdivided into the duodenum, jejunum, and ileum.

The large intestines are twenty-three feet long, and are subdivided into the cæcum, colon, and rectum. They are composed of three coats, one external or serous, middle muscular, and internal mucous coat.

The serous, peritoneal, or external coat is attached to the muscular by cellular tissue, and contains numerous blood-vessels, lymphatics, and nerves.

The muscular coat is composed of two layers of fibres, a longitudinal and a circular. The longitudinal fibres cover all the small intestines. In the large they form bands, which draw the intestines into pouches, except upon the apex of the cæcum, and also a portion of the rectum, where the fibres collect together at the posterior part of the rectum, and form a muscle called the internal sphincter ani. The mucous coat is also connected to the muscular by cellular tissue, and in the small intestines is studded by numerous very vascular villi of a conical shape, each one containing a rootlet of the absorbent vessels in its centre.

Glands are situated in the submucous tissue of the duodenum called Brunner's, or Racemose. Lieberkühnian follicles are found throughout all the intestines, and also small ductless glands. Solitary glands are found in the large and small intestines, and Peyer's patches in groups in the jejunum and ileum.

The mucous membrane in parts is thrown into folds which form valves; one exists at the opening of the ductus choledicus communicus vel pancreaticus, and one at the entrance of the small intestines into the large, called the ileo-cæcal valve.

The mucous membrane of the large intestine has no villi.

Spasmodic Colic, as the name implies, is spasm of the muscular coat of the intestine, and is, as a rule, confined to the small, but it may and does attack the large intestines; in these cases it is only a secondary disease brought on by distension of the bowels with gas.

Causes.—Food to which the animal has not been accustomed, or food eaten rapidly after a long fast, or before fast work, for at that time the digestive organs are very vascular, consequently more irritable; large draughts of cold water when the animal is heated; costive bowels, by exciting irritation; calcareous concretions, or other offending bodies; tumours in the mesentery; intussusception, stoppage of the biliary duct, &c.; in fact, anything that will excite irritation of the muscular coat will cause colic, especially where there is a constitutional tendency.

Symptoms.—The animal becomes uneasy; if at work he will stop or go faster, scrape with the fore feet, look round to his flank, kick violently at his belly, shift from side to side, draw all four legs together, lie down, roll, get up, shake himself, and then he may eat a little. Probably he remains easy for some time; then he begins as before to evince signs of pain, but of a more violent character than the preceding ones; perspiration rolls off him; he throws himself on his back, in which posture he will often remain for some seconds. These symptoms may continue off and on for a consider-

able time; during the intervals of ease the pulse is not altered, but during the paroxysms it is increased.

The treatment in the above case is very simple—nothing beyond a mild stimulant may be required, to excite the nerve-centres and promote healthy muscular action.

In many cases of spasmodic colic death takes place before we can do anything, and in our *post-mortem* we find no trace of disease.

In other cases the disease continues, and calls forth all our discrimination in the choice of remedies. Then if the animal is not placed as he ought to be at first, in a good, comfortable, roomy box, with lots of straw, &c., he must be put at once into one; remove all obstructions, or anything which he is likely to come in contact with. During the violent struggles that are sure to follow, give an antispasmodic draught, back rake, give injections of tepid water and soap; stimulate the abdomen with ammonia liniment, mustard, or hot cloths; if these are not at hand, have the belly well rubbed with wisps of hay, by placing a man on each side of the patient. If the horse is no better in a very short time give another antispasmodic, composed of—

℞ Ol. Lin., Oj;
Sp. Æth. Nit., ʒjss;
Tinct. Opii, ʒij.

I have also derived great benefit from the administration of Fleming's tincture of aconite, in from ten to twenty drops, in a little cold water.

If no relief is obtained by these means you must begin to guard against inflammation of the bowels, and in doing so place your confidence in venesection, with oil, opium, counter-irritation, and constant injections.

If you find any difficulty in giving the medicine when the poor sufferer is on his legs, wait until he lies down, then raise his head, and you can give it without the least trouble.

Flatulent Colic or Tympanitis is caused by gaseous fermentation taking place from the accumulation of a lot of indigestible food in the large intestines.

The causes are many, as in spasmodic colic; but the disease most commonly arises from the eating of green food, or anything that does not agree with the animal, bad teeth interfering with mastication, disease of the stomach, liver, pancreas; in fact, anything that will interfere with or prevent healthy digestion.

Symptoms.—The same as those of spasmodic colic, only there is distension with gas, which at times impedes respiration by the distended bowels pressing upon the diaphragm. When this takes place combined with spasm the symptoms are more violent, the poor beast breaks out into profuse perspiration, wears a haggard or care-worn look; the ears droop, the pulse often falters; sometimes the horse staggers, and in bad cases becomes delirious; then the lungs not being able to perform their normal function, the

blood becomes impregnated with carbonic acid; the heart has extra work to perform in sending the blood more frequently to the lungs to become oxidized, and part with its superabundance of carbonic acid.

Treatment.—Consists in neutralizing the gas and allaying spasm, which, as I stated before, is almost sure to come on through distension of the muscular coat. Many practitioners give nothing but bicarbonate of soda and water, others employ ammonia in its different forms, or chloride of lime, &c. &c.

In fact, so numerous are the remedies for flatulent as well as for spasmodic colic, that each practitioner has his own, every one believing his to be the best; in fact, the principal bulk of cases require nothing but simple treatment. So I will leave it as a matter for discussion, as to which is the best and most effectual remedy in both cases; but no matter what you apply, some cases will, in spite of you, run on to enteritis.

Enteritis, or inflammation of the bowels, may attack any portion of the intestinal canal, or either of the three coats—serous, muscular, or mucous. The term enteritis has been most frequently applied to the commonest form of acute inflammation of the bowels, viz., that in which all the textures are implicated. It generally attacks the small intestines of the thorough-bred horse, and the large intestines in the cart-horse.

Causes.—Like colic, enteritis is often brought on by dashing cold water over the body when the horse is in a state of perspiration; but improper feeding, dry food and little water, worms, calcareous concretions, constipation, intussusception, tumours in the mesentery, in fact, anything that will produce colic may cause enteritis.

Symptoms.—Like other forms of internal inflammation, its symptoms may be ushered in by a shivering fit, but in most cases, from the first, we have all the symptoms of colic present; and it is of the utmost importance to discriminate between the two diseases. In spasmodic colic, as I stated before, we have violent fits of pain, then an interval of quiet. In enteritis the pain at first is not so acute; there is no intermission; we have distinct rigors, mouth hot, and a hard and frequent pulse. With these symptoms you may be sure you have a case of inflammation at hand, and not colic. If you mistake colic for enteritis, it is of no moment; but, on the other hand, if you treat enteritis for colic, the consequences will be serious. The mistake is often made by the owners of horses, their grooms, or the first handy man in the neighbourhood, when the case is almost certain to prove fatal, their first remedy being brandy, whiskey, or gin, a smart trot, and the rubbing of the abdomen with the handle of a pitchfork by two strong men. When such treatment as this is adopted a hundred to one but we have a case of enteritis, and that of the worst form. First of all, stimulants may drive a case of spasmodic colic into enteritis; and, on the other hand, if enteritis is present, the treatment must aggravate the symptoms, and increase the sufferings of the poor animal. Pressure will to a certain extent relieve pain in colic, but will increase it in enteritis. Again we have

slight intervals of apparent ease in enteritis, or, *vice versâ*, paroxysms of severe pain, but no thorough intermission, as in colic. During these short intervals of comparative quiet the poor beast will lie on his back, as if he derived some ease from that posture; he does not strike his belly, as in colic.

If along with these symptoms the animal sits up like a dog upon his haunches, there is in all probability calcareous concretions, rupture, or intussusception. Again, in colic, the breathing is almost normal; in enteritis it is hurried, and takes place principally by the aid of the thoracic muscles. In enteritis at first the fever may be high, the pulse strong and hard; but in a short time it will assume a small wiry feel, almost like a thread.

Ultimately cold perspirations bedew the body, the violent symptoms abate, and the horse will stand with his head in a corner for a considerable time, leaning against the wall or manger; then the pulse becomes intermittent, the extremities grow cold. He wears a sharpened ghastly look, delirium may set in, or he becomes more quiet, pain ceases, the sphincters relax, the mouth becomes cold and clammy, and the breath fetid; the horse staggers, falls, makes an effort to rise, but cannot. In short, death is at hand; then with one desperate struggle he stretches himself out, turns his head towards the flank, his lips hang pendulous, he quivers, and after a few convulsive movements death puts an end to the scene.

Treatment.—Having examined our patient, and ascertained that he has enteritis, we must proceed at once to take blood copiously, and as quickly as possible; as to quantity, that you must regulate according to the constitution of your patient.

Keep your finger on the pulse; if it is at first small, bleed, and that freely. You will find it much better and more economical, as far as the strength of the patient is concerned, to take a large quantity at first; in many cases it will cause evacuation of the bowels where cathartics have failed.

After bloodletting give an antispasmodic:

℞ Ol. Lin., Oj;
Sp. Æth. Nit., ℥j to ℥ij;
Tinct. Opii, ℥j to ℥ij.

Apply a mustard poultice to the belly. Keep the horse as quiet and comfortable as you can, and if the horse is not relieved in half an hour give half the above dose, and apply cloths wrung out of boiling water to the belly. Give ten drops of Fleming's tincture of aconite in a little cold water, and repeat every half hour; also continue to give opium combined with calomel.

℞ Calomel., ʒss;
Pulv. Opii, ʒj.
M. One every half hour until relief is obtained.

On no account give aloes. I do not consider purgatives are beneficial in the early stage of inflammation of the bowels; when they are given and operate, the stools are merely watery, and it is

not until inflammation subsides that you have any excrement passed, and then it is in such quantity as to show you it must have been shut up in the bowels during the active stage of inflammation.

Mucous Enteritis.—Inflammation of the mucous membrane lining the intestines may be brought on in a great many ways; all the causes of colic will produce it.

If you give aloes in the last form of enteritis, viz. where we have the two external coats affected and not the mucous, it may be thus caused. If you give a dose for constipation, and it does not operate, it acts as an irritant, and excites inflammation of the mucous membrane.

It may occur in connection with influenza, or any enzootic disease of the air passages, through sympathy with the pneumo-gastric or parvagum nerve.

Horses with slack loins often get the disease in the hunting-field from excitement.

Symptoms will depend upon the nature of the case. You must inquire into the history, and from that you will arrive at the correct mode of treatment.

If brought on by over-exertion and congested lungs, bleed at once, give an antispasmodic, apply warm water to the abdomen, and injections. On introducing your hand into the rectum, if you find it very warm put a little Tr. Opium in the injections, it will allay the irritation in the inflamed parts.

In this disease you must place your hopes in venesection, calomel, and opium, with injections and counter-irritation.

You have all the symptoms of inflammation of the peritoneal coat, but they are not so violent.

If there exists simple irritation of the mucous membrane, super-purgation will be present; that you must allay with a gentle laxative and a little Tr. Opium. This form of disease comes under the head of diarrhœa, and for me to enter into it would be taking up too much of your time.

Diarrhœa is caused by irritation of the mucous membrane, resulting in the evacuation of liquid fæces; from this irritation inflammation and ulceration may follow, then we have dysentery.

If the pulse becomes softer, more full and less frequent, perspirations and pain cease, and the bowels begin to act, you may expect recovery; then you must keep your patient on restricted diet for several days.

If the pulse becomes more quick and weak, the extremities become cold, the pain ceases, and symptoms of sinking come on, you may expect gangrene, and a fatal result; but you must not abandon your patient in despair, for I have seen all these symptoms, and on making a post-mortem examination found no trace of gangrene. So this change does not always indicate a morbid condition which is necessarily mortal. Then you must give stimulants to keep up the vital powers, and prevent death by asthenia.

If you make a *post-mortem* examination you will find either the small or large intestines heightened in colour, sometimes almost

black, at others only purple; sometimes we have hæmorrhage into the intestines.

In conclusion, gentlemen, I beg to offer you my best thanks for the very attentive and patient manner with which you have listened to the reading of this paper, and I trust that some good practical information may be derived from the animated discussion which I hope will follow.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

The twenty-fourth quarterly meeting of the above Association was held at Mr. Gray's, Adelphi Hotel, on Friday, January 21st, 1870, at 3 o'clock in the afternoon.

The members present were—Messrs. D. Dudgeon (President), J. Gofton, H. Hunter, R. Brydon, W. Wilkinson, W. Temple, H. E. Wilkinson, C. Stephenson, J. Peele, D. Macgregor, C. Hunting, T. Plews, Mr. Hedley, R. Hall, and the Hon. Sec. Thos. Greaves, Esq., President of the Royal College of Veterinary Surgeons, and Mr. Foreman Loadgate attended as visitors.

The minutes of the preceding meeting were read and confirmed.

Letters were read by the Hon. Secretary from Professor Armatage, and Messrs. Marshall, Glanton, Wornack, Beamish, regretting their inability to attend.

The Treasurer read his annual report, and stated the funds of the Association to be in a healthy condition.

Mr. Wilkinson moved that Mr. Greaves be admitted an honorary member of this Society; seconded by *Mr. Peele,* and carried with acclamation.

The President read the copy of a resolution sent for discussion from the Yorkshire Veterinary Medical Association:

"That each Medical Society in the United Kingdom should send one of its members to represent its views in Council."

It was agreed that the discussion of said subject should take place at next quarterly meeting.

The President read his inaugural address, which was well received, and followed by a spirited discussion, in which many of the members took part.

Gentlemen,—After the very able and elaborate address you have been accustomed to listen to from from former presidents, I am afraid mine will sound very meagre in your ears. However, I have to solicit your patience for a few minutes, while I direct your attention to one or two matters which I consider of interest to us as veterinary surgeons, and especially as members of the North of

England Veterinary Medical Association. First, there is the Contagious Diseases (Animals) Act of 1869, which, as you are all aware, came into operation on the 10th of August last; and that Act, if properly carried out, would very speedily reduce to a minimum, if it did not entirely exterminate, these contagious and infectious diseases which have destroyed so much of our valuable cattle during the past years; but there is one radical defect in the Act, and that is the constitution of the local authorities in counties, viz. the magistrates in Quarter Sessions assembled, as the manner in which the law is carried out in different counties abundantly testifies. Take the County of Durham as an example; there, in the first instance, the veterinary surgeons were appointed inspectors, but in consequence of a resolution passed at an adjourned meeting of Quarter Sessions held at Durham on the 6th of November last, they (the veterinary surgeons) were dismissed, and police constables appinted in their stead; that was no doubt a direct violation of the meaning of the Act, and I have only to refer you to article 24 in the book prepared by the Veterinary Department of the Privy Council for the use of Inspectors, to prove that neither Government nor the framers of the Act ever contemplated the possibility of the police acting as cattle inspectors. Said article states that "the names, addresses, and districts of all such inspectors are to be forthwith forwarded to the Privy Council (and it is advisable that such should also be furnished to all police constables of the district), in order that they may give the inspectors notice of disease as required in article 10 of the general order." However, the magistrates think otherwise. Here is the fact, that the police have superseded the veterinary surgeons in the County of Durham. Now, can anything be done to remedy this? That is a question that I think ought to be discussed by the members present. We did think of sending a memorial to the Privy Council, but I am afraid that would be productive of little good; but I think we ought to do all we can to get the Chambers of Agriculture and Farmers' Clubs, &c., to take the matter up and use their influence with the local authority, and insist on a change; and further, let each veterinary surgeon see the Member of Parliament in his district, and try to get a clause inserted in the Act, making it binding on the local authority to appoint veterinary surgeons as inspectors. And I would ask the Council of the Royal College of Veterinary Surgeons to use their influence and put the matter into the hands of the Parliament Committee. As I do not look upon it as a mere local grievance, but one that affects the whole veterinary profession, therefore, with your permission, I would ask Mr. Hunting to lay the facts of the case before the Committee at its next meeting.

The inspectors for the County of Durham have another complaint against the magistrates, but as that is strictly local and referring to the subject of remuneration, they must endeavour to help themselves.

Before leaving this subject, I would earnestly impress upon every member of this Society the necessity of investigating the nature of

the various contagious diseases specified in the Act of 1869, the laws by which they are governed, the manner in which they are propagated, and, in fact, to thoroughly fit and prepare ourselves for the duties of inspectors, and so convince stock-owners and the public that we, and we only, are qualified to hold that office.

I would also draw your attention to the leading article in this month's *Veterinarian*, on "Inoculation as a Prevention of Contagious Pleuro-pneumonia of Cattle." This subject has been revived again, and as it is a most important one to stock-owners, we ought if possible to be in a position to give a definite opinion as to its efficacy. A few years ago a great deal was said and written about this same inoculation, and I for one certainly came to the conclusion that it was useless as a preventive in long disease, and that proper sanitary measures are more to be relied upon. However, as experiments are to be made upon a large scale, we may be favoured with a little more light on the matter.

Horseshoeing has been brought very prominently before the public during the past year, and valuable prizes are offered by the "Scottish Society for the Prevention of Cruelty to Animals" for the best essay on the subject. One or two patents for horseshoes have been taken out and very well puffed, but as for any of the advantages they profess to have, and the immunity from disease which they pretend to confer on horses' feet, it is, in my opinion, all moonshine.

There is one shoe, "the Charlier," which is said to be a real improvement, and has answered admirably wherever it has been properly applied. Not having practically tested it, I cannot speak from experience; my own opinion is that horseshoeing is a more simple matter than those who write upon it would lead us to believe; in fact, I look upon it very much as a matter of £ *s. d.*, as in every large town, at any rate, a gentleman can get his horse well shod, provided he is willing to pay for it, but so long as the owners of horses patronise the cheap shoeing, and trust entirely to their grooms instead of the veterinary surgeon, so long will they have their horses badly shod and have them lame in consequence.

Veterinary education has been so often before you, and so freely discussed, and is now in such able hands, that I will pass it over; and though there are other matters of importance that I might notice, I will not further detain you, but hasten to conclude. Before doing so allow me to notice the great loss that the veterinary profession has sustained in the sudden and unexpected death of Mr. John Lawson, of Manchester. I had not the honour of knowing him personally, but you are aware that he was one of the truly noble amongst us, and that his constant endeavours was to advance the interests of the veterinary profession; but alas! he was cut down in the day of his prosperity; another example of the uncertainty of human life, and a solemn warning to all of us: "be ye also ready," for we know not the day nor the hour when we shall be summoned hence.

A single word on the prospects of this society. Our October

meeting was one of the best we have had for a long time, and I trust, gentlemen, that you will make some little sacrifices, and endeavour to be both punctual and regular in your attendance at the quarterly meetings; for, depend upon it, there is nothing so calculated to elevate and enlighten our views of veterinary science as the free interchange of thought which takes place during the discussion of the various papers that come before us. I believe there is a great future in store for the veterinary profession; but we must be true to ourselves and put away all petty jealousy, and cultivate those finer and nobler feelings which will enable us to judge favorably of and deal kindly towards each other.

In accordance with a resolution passed at the last meeting, subjects for discussion will be introduced alphabetically—that is, according as the members' names stand on the list, so that there will be no lack of papers in future; and as during my term of office I intend to commence business exactly at the hour, I again entreat members to be both regular and punctual in their attendance.

Mr. Greaves proposed a vote of thanks to the President for his very able address; seconded by *Mr. Peele*, and carried unanimously.

It was proposed by *Mr. Meikle*, that the President's address be sent for insertion in the *Veterinarian;* seconded by *Mr. Brydon.*—Carried.

The members and a few friends afterwards sat down to a sumptuous repast. The usual loyal toasts were drunk with enthusiasm, and then followed several toasts of a professional character, which were fully descanted upon by the various gentlemen who spoke in connection with the various subjects. The evening was spent in a most agreeable manner, with friendly and professional intercourse.

The next meeting of the Society will be held in April, when Mr. Brydon, of Leaham, will read a paper.

JOHN MEIKLE,
Hon. Secretary.

THE LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THIS Association held its usual quarterly meeting at the Trevelyan Hotel, Manchester, on Tuesday evening, the 3rd instant.

Present—The President, A. L. Gibson, Esq.; T. Taylor, P. Taylor, H. Haycock, and T. Greaves, of Manchester; A. Lawson and A. Challinor, Bolton; G. Morgan, Liverpool; Dobie, Birkenhead; W. Whittle and W. J. Challinor, Newby; S. L. Buckley, Blackburn; J. Taylor, Oldham; Howell, Rochdale; and Brooks, Pilkington.

Letters of apology were read from Mr. Dray, Leeds; M. A. Naylor, Wakefield; G. Darwell, Northwick; — Woods, Wigan; — Hill, Wolverhampton; — Greaves, Altringham.

Mr. P. Taylor having alluded, in a very feeling manner, to the death of one of our most esteemed and beloved members, Mr. J. Lawson—

It was proposed by *Mr. T. Greaves*, and seconded by *Mr. P. Taylor*, that a letter of condolence, signed by the President and Secretary of the Association, be sent to Mrs. Lawson and family.

Mr. A. Lawson, of Bolton, read a paper on the various methods of shoeing. It was well received, and caused a very animated discussion. He spoke very highly of the Charlier method, having tried it on his own horses for a length of time, and found it to answer well. The Goodenough method was commented on, but did not meet with many supporters.

Mr. P. Taylor spoke at some length on the subject of veterinary surgeons being the proprietors of shoeing forges, giving it as his opinion that the time occupied in attending to the forge might be better employed in scientific pursuits.

Mr. Haycock followed, advocating the forge as a very useful adjunct to the practice of veterinary medicine and surgery, being of opinion that a veterinary surgeon cannot be master of his profession without having been for some time in the forge of a veterinary establishment in one of our large towns. All improvements in the art of shoeing he considered to have been introduced by veterinary surgeons, and holds the opinion that the time has now come when some amount of scientific education should be given to the practical smith, to be finished with an examination, and the granting of a certificate according to merit. He summed up by observing that he differed from Mr. Taylor almost *in toto*.

Mr. Whittle, the Treasurer, next read a statement of accounts and number of members. It was moved and seconded that they pass.—Carried.

The resignation of Mr. Bostock, of Pendleton, and Mr. L. Lambert, of Stratford, was accepted. Mr. T. Greaves nominated Mr. Bostock, of Altringham, Mr. A. Lawson, of Bolton, and Mr. J. Lawson, of Manchester, as eligible for membership.

A vote of thanks was proposed by *Mr. T. Greaves*, seconded by *Mr. S. Buckley*, to the past officers.—Carried *nem. con.*

The meeting next proceeded to the election of officers for the ensuing year, when Mr. Morgan was elected President; Mr. A. Lawson, Treasurer; Messrs. Gibson, Whittle, and A. Challinor, Vice-Presidents; and Mr. W. J. Challinor, Secretary.

The meeting then broke up, after having spent a very pleasant and instructive evening.

W. J. CHALLINOR, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

The fourteenth meeting of this association was held at the Midland Hotel, Derby, on November 16th, 1869. Mr. Markham, one of the Vice-Presidents, in the chair. There were present—Messrs. Bailey, Pyatt, Greaves, Stanley, Blakeway, Poyser, Proctor, Martin, Rossell, Hill, Taylor, Cartwright, H. J. Cartwright, Barry, Cane, and King.

The members present took lunch together, and afterwards proceeded to transact the ordinary business of the association.

Mr. Blakeway, of Stourbridge, then read an "Essay on Strangles."

Strangles is a term that has been used from earliest date in veterinary science, and although in a strictly scientific view it has nothing to recommend its retention, it is to me a very impressive one, and thoroughly understood by our employers. What would some of our country friends say if we told them their horses had distemper gournu, gournu struma, morbus glandulosa, specific adenitis? Believing plain speech and practical knowledge goes much further, "particularly in country practice," than high-flown language and theory, I am content to retain the old term, adopting the plan of the late Mr. J. Field, of dividing it into two classes, viz. regular and irregular, regular being those well-marked cases when we have in the neighbourhood of the salivary gland healthy abscesses—if I may so use the expression—that will mature, and causing comparatively little constitutional disturbance, run their course, generally terminating favorably; irregular, those that are not well defined, when we have often much fever present. Abscesses form in all parts of the body, or if they confine themselves to the maxillary space or salivary glands, are generally small and do not well mature. I know some practitioners think it of little moment whether we get copious or sparing suppuration; others that suppuration is not altogether essential in strangle fever; but with all due respect to such opinions, my practice has led me to believe those cases do best when the tumours follow quickly on the catarrhal stage, increase rapidly and suppurate freely. Many theories have been advanced as to the nature of the disease, some thinking it to depend upon a materies morbi within the system. Mr. Percy Smale thinks it may be traced to an excess of earthy salts in the organism; others speak of it as allied to scrofula. This would be making it hereditary and tuberculous, neither of which I believe it to be. I am inclined to the opinion that it is a specific disease, depending upon something hurtful within the system, and which nature endeavours to eliminate by the formation of abscess, as an argument in favour of its specific nature; it is peculiar and almost necessary to all young horses, and when once the essential condition of the disease has been fulfilled, they seem to bear immunity to secondary attacks. I am quite aware

all horses do not contract it, still some have it so slight that it almost escapes notice, and they are never exempt from it. I have had it in the sucking colt only a few weeks old. In the *Veterinarian* of August, 1851, I recorded a case in a horse, 14 years old, belonging to Mr. Bishop, of Worcester, and in the March number of the same journal Mr. Quick records a case in a horse 16 years old.

Mr. J. Hodgson has a strong impression that a good case of strangles is a preventive of glanders and farcy. Now, in general practice this would be difficult to decide, as we frequently so soon lose sight of our patients; but in army practice, where each animal is numbered and registered, much might be done to confirm or disprove this assertion.

Is the disease in question infectious or contagious? Here again opinions vary. Professor Armatage has recorded several cases of inoculation performed by himself; and although one or two died of anæmia, not one exhibited the characteristic marks of true strangles; still the question remains open, and I cannot reconcile my mind to the idea of its non-infectiousness. How can we account for the disease so quickly spreading in a stable of horses after the introduction of one labouring under it, unless it be from infection. That an animal does not take a specific malady from inoculation is to my mind only another evidence of the uncertain results of such operations. How often after inoculation do we find symptoms of quite a different character set up in the system, or that from some peculiar strength of constitution we try in vain to produce disease. The professor had one or two die from anæmia, but no tendency to suppuration. Attempt to inoculate a cow with pleuro-pneumonia, and it is very doubtful if you produce anything like the primary disease; also try her with smallpox matter. I have inoculated them direct from the child, and in four out of five I could not produce a single pustule. I am inclined to think in strangles, also in some other catarrhal affections, such as influenza, there is eliminated from the surface of the body, and particularly from the excretions, a morbid principle that impregnates the surrounding atmosphere, and thus communicates the disease. It has been related of a celebrated Yorkshire dealer that he so believed in its infection, that he would procure a diseased animal to place among his young horses, knowing they throve much more rapidly after recovering from the effects of it. This seems to me bold practice, and I would say to such a man prevention is better than cure.

The predisposing causes are many, but chief of all some peculiar state of atmosphere, that in particular seasons causes the disease to assume almost an epizootic type. Change of temperature and diet, removal from the country pasture to town stables, also have their effect; and I don't think we can wonder at this, when we consider this emigration is the same as a change of seasons, not slow and imperceptible, but quick and instantaneous; the animal in a state of nature will accommodate itself wonderfully to change of temperature; but this aptitude becomes impaired and deprived of its power of

resistance when taken by surprise, and the physical agents which surround it so suddenly modified; the animal also, in spring and autumn, from moulting, is more sensitive to these changes. At these particular seasons we always get more catarrhal affections, especially if such seasons are ungenial. I would place also plethora and its opposite extreme, poverty, among the predisposing causes.

The result or termination of strangles is often complicated and uncertain; for, although if we have had good abscesses form and well ripen, the animal may do well, and by his after-thriving appear as though nature had rid his constitution of some impurity, this is not always the case. Secondary abscesses will sometimes form in all parts of the body, and more markedly so in irregular strangles, at some special season, and in some particular localities. How frequently do we find from some cause hidden from the ken of man, that at times wounds of most trivial kind assume unhealthy action, and this to such extent that the veterinary surgeon dreads to perform the most simple operation. It is so also with the disease in question. One month or year we get every case to do well, another nearly all do badly, causing us no end of trouble, and the most untoward results follow. Then it behoves us to be watchful, and I would caution the young practitioner, especially in such seasons, to be careful. Perhaps to better illustrate my meaning I may be allowed to quote a case bearing somewhat on this point. A nobleman purchased of an eminent dealer a pair of valuable young carriage horses, which I was requested to examine. The one horse I rejected in consequence of sore throat and other evidence of strangle fever; but as the dealer consented to treatment being adopted, and was willing to abide the result, the horse was kept. Good abscesses formed, and the disease having run its course the horse was cantered, anxious to learn if any symptoms of roaring were left. He made a slight noise, but it was of such nature that I felt convinced it would not be permanent. Just one of those cases that nature will cure, only give her time. The owner, however, not liking the delay, a seton was inserted under throat. In about a week a small abscess formed on its course and broke. A few days later the horse was off feed, and an immense abscess began to show itself on the shoulder. Fearing I had a case of pyæmia, I immediately removed the seton, when, for nearly three months, abscesses kept forming all over the body, and the horse showed great feverish excitement. With care, liberal diet, and plenty of tonics, he got well, and has worked sound to this day, notwithstanding which I opine it was a genuine case of pyæmia, the seton being the exciting cause. Chronic disease of mesenteric glands, leading to great emaciation, is often a result of strangles, also confirmed roaring. Professor Gamgee, in 'Veterinary Review,' relates a case of arteritis following it, also in 'Our Domesticated Animals' speaks of frequently finding the guttural pouches plugged with consolidated pus as a sequel. I never met with but one case of this kind, and as I did not get the early history of my patient, could not trace its true origin; but the

pouch was completely filled, and the superior part of nasal chamber on one side so much so that scarcely a particle of air could pass. Again, we have cases related of secondary abscess in all the internal organs of body.

Mr. Wallis, of Cambridge, in *Veterinary Journal* of 1852, relates a case of one on spinal cord, and here I will give from my own note-book a short account of one of brain.

In the beginning of July, 1867, I attended a nice riding cob for Mr. John Litt, of Stone, with irregular strangles. The case did not progress to my mind, but was so far recovered that I discontinued treatment on the 18th, enjoining rest and good nursing. On the 5th of August I was again sent for, when the animal showed symptoms of cerebral affection, the owner persisting she had hurt herself in the night, as she was well the day previous. Taking into consideration the disease she had been labouring under, my prognosis was unfavorable, believing abscess had formed on or near brain. Being a valuable animal, treatment was adopted consisting of blisters behind ears, seton to poll, cold application to head, &c., under which she rallied for a day or two, when she became suddenly nearly comatose, obstinately standing with head over, and resting on stall on one side of her box. I administered liquids by passing tube over the larynx, the power of deglutition being completely lost; gradually getting worse, on the 10th she was destroyed.

Post-mortem showed all internal organs healthy, except a little hepatization of anterior lobe of right lung, and small tumours in mesenteric glands. This latter, I think, is almost always present in cases that have died from effects of strangles; they, like the salivary glands, seem particularly susceptible of the disease. In the medullary substance of right cerebrum was an abscess as large as a small hen's egg. None of us like losing patients, but the *post-mortem* in this case was very satisfactory to me, as many who had seen the patient during life ridiculed the idea of abscess in the brain.

I come now to treatment of strangles. This, as a rule, is most simple. Attend well to patients' comforts, feed on food easy of mastication and deglutition, and encourage suppuration in every way. As regards food, green, scalded, is best, and I would never allow a horse with strangles food on the ground or in rack, from the simple fact that the tension produced by bending the neck inflicts unnecessary pain. An exception must be made where colts are obliged to be left at grass. It is often a matter of no slight moment that we should see to our patients' little wants. We are all apt to leave to others that which is never done, and in no calling is the old adage, "If you want a thing done well, you must do it yourself," more fully verified than in that of the veterinary surgeon. To hasten suppuration I do not consider anything equal to steaming the head and hot fomentations. They are grateful to the animal, do not irritate, and favour exudation. Stimulating applications I rarely use, and have yet to learn that blisters have any beneficial effects; on the contrary, believe they often do harm. By increasing tenderness

they prevent feeding; they thicken the integument; and I have seen the tumours recede after their application; as soon as abscess fluctuates open boldly, by which we gain two advantages. We rid the body of an impurity sooner than if the abscess were left to break, and we get a clean-edged wound always more favorable for healing than a ragged one. Sometimes when abscesses are tardy or situated internally it is necessary to perform tracheotomy to prevent suffocation, and as it is so simple an operation in our patients, I would not defer it too long. Many a valuable animal has been lost from this cause, and disrepute brought on a fine and humane operation. Only let the animal in its great efforts to breathe draw matter into trachea, and then will be set up such irritation in bronchial tubes and lungs as will defy all after treatment. As regards medicine, very little is required unless we get complication of disease; and as the tendency is always of an adynamic character, never deplete, bleeding and aloes scrupulously avoid. If you have constipation be content with enemas and diet. I frequently use a mixture of Potass. Nit. c. Spt. Æther. Nit. and Liq. Ammon. Acet.; not so much with the view of a medicine as a wash for the mouth, giving it gently out of a soda-water bottle, when it acts to some extent as a gargle, and oft have I seen with satisfaction the benefit the poor animal seems to derive from it. The mouth, from being clammy, becomes clean; the mucous membrane, which was pallid and unhealthy, assumes for a time at least something like a natural tinge; the eye also brightens, and the horse will frequently attempt to feed. After the active stage of disease has passed over, tonics are not only admissible but often called for, and should we fear any tuberculous state being left, combine also the preparations of iodine. If any thickening remains in neighbourhood of larynx, simple blisters or blisters of iodine may be used. Of all treatment in such cases, and when we have any cause to dread impediments to respiration, I would recommend the setons, having great faith in them for chronic affection. They will not cure confirmed roaring, neither will any other treatment, but as their action can be kept up for an indefinite period without fear of blemish, they beat blisters, and are far preferable than to me the absurd practice of firing the throat to remove any thickening or chronic affection of the larynx.

After an animated and profitable discussion, in which all joined, the thanks of the meeting were presented to the essayist, and he was requested to allow his essay to be published, to which he acceded. With vote of thanks to the chairman the proceedings terminated.

THE NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

The sixth quarterly meeting of the above Association was held on Tuesday, January 4th, at the Norfolk Hotel, Norwich. Mr. F. Low, V.P., in the unavoidable absence of the President, occupied the chair.

There were also present—Messrs. W. Smith and J. W. Riches, Norwich; R. Cleveland, Wymondham; G. H. Plumbley, Skeyton; D. G. Hunting, Loddon; and the Hon. Secretary.

Letters of apology were received from several gentlemen who were unable to attend.

The minutes of the previous meeting having been read and confirmed, a communication, enclosing a resolution received from the Yorkshire Veterinary Medical Association was read. It was as follows:—

"That it is the opinion of this Society that the Veterinary Medical Societies of the United Kingdom are of sufficient importance to be represented in Council. And further, that this Society is of opinion that if each Society in the United Kingdom would send one of its members to represent its views in Council, the profession would be more thoroughly represented, and thereby the Council so constituted would be better able to bring about the desired changes so much needed, and which are so essential, before our profession can claim that *status* in society which, as one of the liberal professions, it has a right to expect."

The resolution having been put to the meeting, on the motion of Mr. Smith, seconded by Mr. Riches, it was unanimously adopted. The Hon. Secretary was also requested to inform the Secretary of the Yorkshire Veterinary Medical Association of the desire of the Norfolk and Eastern Counties Association to co-operate with other Associations in effecting the object in view.

Mr. Overed, in accordance with a previous notice, moved that the quarterly meetings of the Association be held in future on the first Saturday (instead of Tuesday) in January, April, July, and October. He trusted that by this means they would be able to secure a larger attendance of members residing in the country. The motion was seconded by *Mr. Smith*, and carried *nem. con.*

Mr. R. Cleveland, M.R.C.V.S., Wymondham, then read a very instructive and interesting paper on "Parturient Apoplexy in Cows," which elicited a lengthened and animated discussion, in which most of the gentlemen present took part.

A vote of thanks having been passed to the Essayist for his interesting paper, and to Mr. Low for his conduct in the chair, the proceedings terminated by the members dining together.

(Signed) J. D. Overed,
Hon. Secretary.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The seventh annual meeting was held at the Great Northern Railway Station Hotel, on Friday, the 28th January, at 12.30 noon, the President, Mr. James Freeman, in the chair.

The following gentlemen were present, viz. :—Mr. Thos. Greaves, Pres., R.C.V.S., Professor Williams, Messrs. P. Taylor, Jas. Howell, M. E. Naylor, S. F. Fallding, Chas. Secker, Chas. Patterson, Josh. Freeman, Jno. Freeman, P. Smith, Job Cooper, P. Walker, J. W. Anderton, Wm. G. Schofield, R. Nicholson, E. C. Dray, Jno. Cuthbert, Wm. Broughton, and Wm. Fearnley.

Letters of apology for non-attendance were received from the Professors of the London College ; Mr. Constant, of the 5th Dragoon Guards ; Mr. Varley, of the 13th Hussars ; Mr. G. Morgan, Liverpool ; and Mr. W. Haycock, Manchester ; and also from Messrs. Hain, McTaggart, Bale, Faulkner, Fryer, Carter, Kirke, and Jno. Schofield.

The minutes of the last meeting were read and confirmed.

The Secretary read a note from Mr. Godfrey Smith, tendering his resignation, which, after a little discussion, was accepted.

Mr. Dray alluded to the death of Mr. John Lawson, of Manchester, and paid a just tribute of respect to the many excellent qualifications of the deceased gentleman. He concluded by moving the following resolution :—"That the Honorary Secretary be instructed to write a letter of condolence to Mrs. Lawson and family, expressing the Society's sincere sympathy and deep regret at the unexpected and calamitous demise of Mr. Lawson. The letter might take this form :—

" 'Madam,—We beg most sincerely to tender you our heartfelt sorrow in your affliction and bereavement, and trust that you may have health and strength to bear your irreparable loss ; and that by the affection of your children and the kindness of your friends, the poignancy of your grief may be assuaged. We also hope that you may live, not only to see your children grow up and imitate their late estimable father, but that they will prove a comfort and solace to yourself.' "

The motion was seconded by *Mr. Greaves*, and supported by *Professor Williams*, and carried unanimously.

The further consideration of Mr. Fearnley's resolution then took place ; *Professor Williams*, *Mr. Greaves*, and *Messrs. Dray*, *Naylor*, *Broughton*, and *Fearnley* spoke, advocating the carrying out of the resolution. Ultimately, upon the motion of *Mr. Greaves*, seconded by *Mr. Nicholson*, it was unanimously resolved, "That Mr. Dray be nominated at the annual meeting of the College in May, and that the members of the different Veterinary Medical Societies be requested to support his candidature."

Mr. Fearnley gave notice that at the next meeting he should propose, that in the event of Mr. Dray being elected to the Council, the sum of ten pounds per annum be allowed him from the funds of this Society, in part payment of his expenses.

Mr. Dray proposed to add to Rule 8, "and no monies or funds of this Society be appropriated for any other purpose than to liquidate any debt or debts of the said Society, or the legitimate advancement of veterinary science, or aid in the cause of benevolent objects connected with the veterinary profession." *Mr. Naylor* seconded the motion, which was carried unanimously.

Mr. Patterson moved, and *Mr. Nicholson* seconded the motion, "That Rule 11 of the Society's Regulation Rules be rescinded, and the following words substituted, viz. 'That the whole of the meetings of this Society be held in Leeds.'"—Carried.

The President proceeded to read the inaugural address, which was listened to with marked attention. It contained much useful matter, and was especially forcible in dealing with the subject of personal morale and professional etiquette.

The reading of Mr. Anderton's paper was deferred, owing to want of time.

The company then dined together. The usual loyal and patriotic toasts were drank, followed by a number of veterinary toasts. A very pleasant and happy reunion was enjoyed.

(Signed) W. Broughton,
Hon. Sec.

[We have received a copy of the address, which we regret to be obliged to withhold from publication, in consequence of the great demands on our space.—Eds.]

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

Gentlemen,—Allow me through your pages to draw the attention of the profession to the circumstance that the next annual meeting of the above Society will shortly be held, and most probably at the same time as the examinations at Edinburgh. Of this, however, due notice will be given to each member.

At the meeting in question, the President, P. Taylor, Esq., will move an alteration of Rule II, regarding livery stables and repositories.

The Secretary will move the following addition to the Rules:

1st. That donors of the amount of £10 or upwards in one donation shall be elected Life Governors of the Society, and be eligible to vote at the distribution of its funds.

2nd. That any Veterinary Medical Association voting the sum of £20 in one donation to the funds shall be entitled to nominate one Life Governor.

3rd. That no grant shall be made from the funds before they reach the sum of one thousand pounds.

Any member wishing to amend or alter any of the rules, or having any suggestions to make, would oblige by communicating with me as early as possible.

GEORGE MORGAN, M.R.C.V.S.,
Hon. Sec.

To the Editors of the 'Veterinarian.'

Veterinary Jurisprudence.

PROSECUTION UNDER THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

A FARMER FINED £25.

IT will be remembered that some time ago a case came before the Norwich magistrates, in which Charles Huggins, a farmer and cattle dealer, residing at Banham, in this county, was summoned, on the information of Mr. Smith, veterinary inspector, for exposing on Norwich Hill a number of cattle affected with foot and mouth disease. The magistrates being of opinion that they had no jurisdiction in the case, declined to hear it, and the Court of Queen's Bench was afterwards applied to for a mandamus. The matter was brought under the notice of the House of Commons by Mr. Clare Sewell Read, who asked the Vice-President of the Council if he was aware that such doubt existed as to the power of summary jurisdiction of justices under the Contagious Diseases (Animals) Act that the Norwich and other magistrates had declined to hear any summonses under the Act, and if he would take steps to remove the uncertainty which now existed; and if, when the local authorities asked information from the Veterinary Department of the Privy Council, an answer, stating "that it is not within the province of this department to interpret an Act of Parliament," was all the aid local authorities were to receive from the Privy Council in carrying out the Act and orders for suppressing contagious diseases among cattle.

Mr. W. E. Forster replied that the Privy Council was aware that some doubts had been expressed as to whether a summary jurisdiction was enacted by the Act of last Session, though he could not suppose that there was any doubt at all as to whether it was intended to do so. They had consulted the law officers of the Crown, and were advised that such summary jurisdiction did exist. They were aware that the magistrates of Norwich, among others, had refused for a time to issue

summonses, but an appeal against such a decision had been heard in the Court of Queen's Bench, which Court had made a rule absolute directing the issue of such summonses. Under these circumstances there would be no necessity for taking any steps to remove uncertainty.

As to the second question, it had never been the intention nor the practice of the Privy Council to refuse assistance in carrying out this difficult Act of Parliament. As to the reply to a letter which was referred to in the question, he had looked and found that there was one letter that by pure accident merely contained the statement that had been mentioned, but generally speaking, when no interpretion of an Act had been given, it was the practice at the Privy Council Office not to attempt to give an interpretation, as to pursue such a course would only mislead, because it was not an interpretation that could have any force in a court of law. But the officers of the Veterinary Department of the Privy Council were directed to give all the assistance in their power; where there was any question as to facts they were to answer it, but they were simply to decline to answer as to interpretations of the law when such interpretations would be misleading.

The case accordingly came on for hearing at the Guildhall on Tuesday, before W. J. Utten Browne, and J. M. Venning, Esqs. Mr. Huggins was summoned at the instance of Mr. W. Smith, veterinary inspector under the Contagious Diseases (Animals) Act, 1869, for unlawfully exposing for sale in the Norwich Cattle Market, on the 20th of November last, a certain number of animals, together with sixteen oxen affected with the foot and mouth disease, contrary to the provisions of the said Act, whereby he had incurred a penalty not exceeding £80.

Mr. Mendham (Town Clerk) appeared in support of the information; and Mr. A. T. Clowes, New Buckenham, for the defendant.

Mr. Mendham, in opening, said that the information was laid under the 57th Section of the Contagious Diseases (Animals) Act, 1869, and he submitted that it would be the duty of the magistrates to convict unless the defendant could show that he did not know that his animals were affected, and could not with reasonable diligence have obtained such information. After stating the facts of the case as they were afterwards proved in evidence, he said that the Market Committee felt bound not to pass such a case over, because it was absolutely necessary for the protection of the public to enforce stringent measures for the stamping out of the disease in question, and in all cases in which there was reason to believe that a man knew the law, or might have known the law, he was entitled to no consideration.

Wm. Smith, veterinary surgeon, deposed,—As inspector I visited the Norwich Cattle Market on the 20th November last, and discovered a herd of beasts belonging to the defendant affected with foot and mouth disease. The defendant, who is a large cattle dealer and farmer, admitted that the beasts were his. I ordered the beasts to be driven into Barnard's yard, and I there examined them in the

presence of several persons. I drew out sixteen animals in an active stage of febrile disease, and in such a state that they would have communicated the disease to other animals. There were blisters on the tongue, and the roofs of the mouths of the animals. Before I examined them minutely I saw that many of them had a discharge from the eyes, and they presented every appearance of disease. Any person would have detected at once that there was something the matter with the cattle.

By Mr. Browne.—In my judgment any person passing the herd would have seen that the animals were affected with disease. Some of the feet of the sixteen animals were tender, but the attack on the feet is usually secondary.

By Mr. Clowes.—I do not know that the bullocks were positively lame. I do not think they were so lame as to attract attention. The primary symptoms of the disease are a falling off of feed, a staring coat, and shivering. In my opinion the disease could not have been recent. I am not prepared to swear that if I had seen the animals thirty-six hours previously, I could have detected it, though I could have seen that some disease was being incubated. It did not take any unusual time to examine the animals. The nineteen other animals were allowed to return to the Hill, as the Act did not empower me to detain them. Unless I am prepared to swear positively that animals are affected with disease, it is my practice to let them go. When Mr. Huggins came up he expressed his willingness to do what I wished, adding that the animals had the disease, and that he had others at home affected with it.

Daniel Aldous, examined by Mr. Mendham.—I am assistant to Mr. Smith. I live at Trowse, and up to last Michaelmas the defendant occupied some land there. I assisted Mr. Smith to examine some bullocks belonging to the defendant on the 20th of November last. After examining them in Barnard's yard, the result was that sixteen were found to have foot and mouth disease. You might have told by the look of them, without examination, that they were affected. To my knowledge they were about the height of the disease. I should think no person having any knowledge of cattle could fail to see that they were diseased.

By Mr. Clowes.—I do not know how long it takes to attain the height of the disease. We were twenty minutes or half an hour in examining the animals.

P.-c. Pike, examined by Mr. Mendham.—Before the animals were taken to Barnard's yard several of them appeared to me to be very lame, their eyes looked bad, and they frothed at the mouth. It was these circumstances which attracted my attention to the beasts. I think any person could have observed that they were affected. I saw Mr. Smith examine the animals. When he opened their mouths I observed large blisters, some of them broken.

By Mr. Clowes.—I cannot say that I saw the animals before Mr. Smith did. My attention would have been attracted to the animals if Mr. Smith had not been there.

This was the case for the prosecution.

Mr. Clowes, before proceeding to speak on the merits of the case, remarked that it had not been proved that the animals were exposed for sale.

Mr. Mendham said that was unnecessary, and referred Mr. Clowes to the section under which the information was laid.

Mr. Clowes then said he should prove that Mr. Huggins did not know that the animals were affected. It had been stated that Mr. Huggins said that there was disease on his farm, but he could not have made such an assertion without stating what was not the fact. Mr. Huggins was very deaf, and perhaps had not understood any question which might have been put to him. There was disease on the farm in September or October, but for some weeks previous to Diss Fair, on the 8th of November, it had entirely disappeared. Mr. Huggins purchased twenty-two bullocks in Norwich, on Saturday the 13th of November, and had them taken to a place in his occupation at Crown Point, and on the following day he sent over a man from his farm at Banham, seventeen or eighteen miles distant, to see them. This man reported that they were all right; and, under those circumstances, he submitted that Mr. Huggins did use reasonable diligence. In civic actions masters were responsible for the acts of their servants, but in a case of this kind it would be very hard that it should be so. Should the Bench consider that there must be a conviction, he thought the smallest penalty would meet the case. The defendant, though he did not plead ignorance of the law, was unable to read or write, and did not even know that the paper he received was a summons. He had twice attended in this Court; and, instead of raising any objection to the jurisdiction of the Bench, had prepared at some expense to defend the case.

Arthur Ragg, examined by Mr. Clowes.—I was in Norwich market on the 13th of November last, when Mr. Huggins purchased twenty-two beasts, which he sent to Crown Point. I went to Crown Point on the following Wednesday, to see if they were all right, and when I returned I informed Mr. Huggins that the bullocks were all right. A number of other bullocks were sent to Crown Point on Friday. At that time there was no disease on Mr. Huggins' farm. On Saturday, the 20th of November, I accompanied Mr. Huggins to the Hill. Afterwards I saw nineteen bullocks on the Hill, including all those sent to Crown Point the previous day.

By Mr. Mendham.—The farm had been free from disease more than a fortnight before Diss Fair.

John Savory, examined by Mr. Clowes.—I am farm bailiff to Mr. Huggins. Diss Fair is about a month after Michaelmas. There has been no disease on the farm. The bullocks sent to Diss Fair had not been unhealthy, and they were all right when they first came upon the farm.

Mr. Mendham (to witness).—You may go.

Mr. Clowes.—I have not seen this witness.

Mr. Browne.—No, I should imagine not.

Mr. Mendham, in reply to an observation in Mr. Clowes' address,

said that these were cases in which the master was bound himself to know, and not to trust to servants.

After a short consultation,

Mr. Browne said—We consider this case has been clearly proved, and we shall inflict a penalty of £25, with the costs, £3 16s.—*Extracted from the 'Norwich Mercury.'*

ASPLEY GUISE.

CHARGE OF CRUELTY AGAINST A FARMER.

TUESDAY, FEB. 15TH, 1870.

AT the Woburn Petty Sessions, on Friday last, before C. S. Harker, Esq., Mr. Summers Douglas, a farmer, and one of the guardians of the poor for the parish of Aspley, was charged with unlawfully illtreating, abusing, and torturing a horse at Aspley, on the 15th ult. The case was adjourned from the last petty sessions, for further evidence.

Mr. Stimson (from the office of Messrs. Conquest and Stimson) attended for the defence.

Police Constable Armstrong proved seeing the horse at clay cart. It had a piece of sacking tied over its neck, under which was quite a hole, and a wound running matter, which dropped upon the road as the animal went along, and the wound smelt very badly.

Henry Dolton, Mr. Douglas's horsekeeper, proved that the horse had the "pole evil," and that it discharged. He had put the sacking on to hide it when it went to work. The horse had not worked for a fortnight before, and had not worked since the policeman stopped it. It had only worked five days since Christmas. The horse required exercise; the doctor said so, and a little work would not hurt.

Charles Powell, veterinary surgeon of the Sand House, proved that the horse was suffering from a disease called the "pole evil." There was a wound on the neck, but the hames could not possibly touch it.

Thomas Whittington, a farmer, of Toddington, proved that he knew the horse. It had the "pole evil," with a running wound on the neck; he had dressed it. He told Mr. Douglas the mare would be better at work. He had seen many horses with "pole evil," and had got some under his hands now; he had recommended one that is under his hands now to be worked.

John Edward Rogerson, veterinary surgeon, Bedford, proved that he had had considerable experience with horses suffering from "pole evil." Exercise would do them good; he said he should advise them to be worked. The hames would not touch the wound.

The disease was in an advanced state, and was going on all right. The horse is in good condition.

Police Constable Armstrong admitted that the harness could not touch the wound, and that the horse was in good condition.

The case was dismissed.

This case excited great interest, and considerable satisfaction was expressed at this decision.—*Leighton Buzzard Observer.*

PARLIAMENTARY INTELLIGENCE.

HOUSE OF COMMONS, *Feb.* 15*th.*

TRANSMISSION OF LIVE STOCK.

MR. W. E. FORSTER (in reply to Sir R. Anstruther) said that his noble friend, Lord de Grey, being anxious to carry out the Act of last session for regulating the transmission of live stock by land and sea, with a view to mitigating the injuries at present inflicted upon animals by the want of proper accommodation, had had a departmental committee to take evidence and make suggestions. The Privy Council had only just received their report, but not the evidence. As soon as they had done so the Government would take the matter into its most serious consideration.

CONTAGIOUS DISEASES (ANIMALS) ACT.

MR. W. E. FORSTER (in answer to Mr. C. Read) said the Privy Council were aware that some doubts had been expressed as to whether summary jurisdiction was enacted by the Act of last session; but they had been advised by the law officers of the Crown that such jurisdiction did exist. It was true that some magistrates, the Norwich magistrate amongst others, had for a time refused to hear any summonses; but a case had been brought into the Queen's Bench, and a rule made absolute, that summonses should be issued and adjudicated upon, and under these circumstances the Privy Council was of opinion that it was not necessary that any further steps should be taken. Directions had been given to the officers of the Veterinary Department to give all the assistance in their power, whenever any question was raised in regard to facts, but not to attempt an interpretation of the Act of Parliament.

HOUSE OF COMMONS, *Feb.* 21*st.*

MARKET FOR FOREIGN CATTLE.

MR. SAMUDA asked the Vice-President of the Council whether, before the Government approve the site that may be selected by the

corporation for the waterside market for foreign animals, means would be taken to ascertain the views of those interested in the trade, and to insure a sufficient extent of accommodation being provided.

Mr. W. E. Forster replied, that the Act passed last year did not make it the duty of the Government to fix on a site, or to say what site they considered best. It only enacted that in the event of the corporation failing to provide a market before a certain date, the Government might undertake the duty themselves. The Market Committee of the Corporation had seen Lord De Grey and himself, and brought under their notice several sites. A written communication had been since made to the Committee, informing them that the Lords in Council did not see any reason to object to the site ultimately proposed, provided that the area was sufficiently large to meet the requirements of the market, and that it would afford the necessary wharf accommodation. He had intended to mention the site, but as he was informed that the negotiations for its acquirement were not completed, he thought he had better not do so.

REPORT ON THE CATTLE PLAGUE.

Lord R. Montagu asked the Vice-President of the Committee of Council on Education, when the report on Cattle Plague in Great Britain, presented on the 22nd of July, 1868, would be delivered to members.

Mr. W. E. Forster said the report was in the hands of the printers, and he was anxious that it should be presented as soon as possible; but, owing to great pressure of business in the department, the preparation of the appendix had unavoidably been delayed.

ARMY APPOINTMENTS.

(from the 'London Gazette.')

War Office, Pall Mall, *Feb. 8th.*

Royal Artillery.—Acting Veterinary Surgeon Joseph John Plunkett to be Veterinary Surgeon, *vice* John Hayward Gould, who resigns.

Veterinary Department.—Walter Henry Kemp, Gent., to be Acting Veterinary Surgeon.

THE

VETERINARIAN.

VOL. XLIII. No. 508. APRIL, 1870. Fourth Series. No. 184.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from p.* 188.)

Articulations.—We have now briefly surveyed the bones which enter into the construction of the horse's foot, and seen how well arranged they are to meet what is demanded from them, individually as well as collectively. The bones would only be partially fitted to perform their duties were they not also so conformed as to act harmoniously with, and to aid each other in, various combined movements of the greatest necessity for the production of locomotion, in addition to conferring stability to the limbs as a whole, and through them to the entire animal machine.

To fully ensure this harmony of motion and stability, and afford security to the several bones, strong ligamentous bands, advantageously placed, pass from one to another, and are usually fixed at the sides or behind these bones, in double, single, or cross layers, connecting them closely and solidly; and, in addition, particular tendons, or their expansions, in passing over or in being inserted into them, afford support, while at the same time they induce general or special changes in their relative position, by acting on one or more of their surfaces.

An enumeration of the ligaments of the horse's foot, with their situation and attachments, would, we fear, occupy more space than their importance to the general reader might

appear warrantable; so we will dispense with much of the somewhat uninviting details pertaining to a history of their origin, insertion, form, and function, and notice at greater length more interesting, though not more essential structures.

It may, therefore, be sufficient to state, with regard to these articulations or joints of the foot, that, though maintained in close apposition by ligaments, tendons, and other strong fibrous textures of a generally inelastic character, the bones we have just described are not allowed to come into direct contact with each other save through the medium of a variety of cartilage that covers their opposing surfaces, and which, by its elasticity, insensitiveness, and very feeble or negative vascularity, affords a most efficient means of diminishing concussion or jar to the limb, and thus averts pain and injury. The composition of this hyaline, true, or articular cartilage is well known; it is not covered by a synovial membrane, as was at one time imagined, though it is stated that it has a lining or surface of pavement epithelium-cells. Histologically, it is constituted by a homogeneous uniform matrix or fundamental substance, containing a more or less abundant proportion of cellular elements; by boiling, this hyaline cartilage yields the substance termed chondrine. Its highly polished surface permits extensive movement to be easily performed, and while it is completely preserved from external disturbance by means of strong fibrous capsules or sacs embraced within the ligaments, and which hermetically close in the opposing surfaces, the smooth aspect of the cartilage is kept constantly lubricated by the bland, unctuous, albuminous fluid (*synovia*) that is continually secreted by numerous small tufts hung like fringes around the margin of each articulation, and which are dependencies of a fine membrane—the *synovial*—lining the interior of the capsule.

This arrangement is, of course, that common to every diathrodial joint, and would not be referred to now but for the fact that there is a different arrangement for the movement of tendons, which has been already casually noticed, and which, in a physiological and pathological point of view, it is necessary to bear in mind. Before proceeding further to a consideration of the tendons, however, there are one or two features in the disposition of the ligaments of the foot that should be noted, more especially with regard to the mode in which these influence its functions.

It may be said that, in consequence of limiting our examination of the limb to the portion commonly designated the "foot," this organ offers only two articulations for study,

and that these are perhaps more complicated in their ligamentous arrangements than some of the other joints of the member.

The chief articulation is formed by the lower end of the coronary bone, and the double concavity into which it fits, and which is constituted by the union of the pedal and navicular bones, their cartilage-covered upper faces offering a wide surface for contact and interplay with that bone. The second articulation is between the pedal and navicular bones, at the points already indicated, and which are also covered by true articular cartilage.

The three bones are maintained in apposition by four fibrous bands—two on each side—designated the *anterior* and *posterior lateral* ligaments, and a single or *interosseous* ligament that attaches the navicular to the pedal bone.

(*To be continued.*)

ON THE STRUCTURE AND DISEASE OF THE NAVICULAR BONE.

By T. D. Broad, M.R.C.V.S., Bath.

By your permission I will make a few remarks on Mr. Fleming's paper in last month's *Veterinarian*, as I presume he refers to my views on navicular disease. When speaking of the anatomy and pathology of the navicular bone (at page 184), Mr. Fleming states that "there is enclosed in the navicular bone a nucleus of a loose or spongy texture." Now, a longitudinal section of the bone will show that, with the exception of the outer shell, "which is not thick," the whole substance of the bone is of a sponge-like texture. He next states that the inferior face of the bone is covered by a particular membrane, which is not articular cartilage, but a membrane which differs but little (if anything) from those membranes which are usually classed by the name of stratified fibrous cartilages, and cover bony prominences or grooves, over or through which tendons glide. I have thoroughly examined the cartilage microscopically on each surface of the navicular bone. Generally a few fibres interspersed in the substance of cartilage are to be detected on the inferior surface, but not sufficient to constitute it fibro-cartilage, such as exists between the vertebræ, the interarticular discs on the tibia, maxillary margin of the acetabulum, and other joints.

When tendons run through sheaths they are always

covered by a synovial membrane; the surface of other joints are not covered by synovial membrane; this does not extend beyond the edges of the joint. The cartilage covering the inferior surface of the navicular bone is thickest at the posterior edge of the bone, and gradually becomes thinner as it approaches the anterior edge which adjoins the coffin-bone. In aged animals, articular cartilage has a tendency to become fibrous. In proof of stratified fibrous cartilage being subject to the same process of disease as non-fibrous articular cartilage, I have only to refer to the case of the mare, in Mr. Fleming's note—which, by the bye, he showed me at Chatham in February, 1869, as being then about to be condemned.

Mr. Fleming cites this case in support of his theory that the disease commenced on the long flexor muscle of the forearm and extended to the joint, producing ulceration of the stratified fibrous cartilage. In my opinion, the disease of the mare's shoulder did not commence in the muscle, but in the head of the humerus, and subsequently extended to the soft tissues of the joint. If I mistake not, there was a considerable bony enlargement on the humerus, and I also believe that Mr. Fleming told me that the exact seat and nature of the lameness was not at first very clear. The disease constituting spavin, navicular disease, and ulcerated joints ("injuries to the capsule excepted"), commences in the bone, and extends to the soft tissues of the joint, and does not, as conjectured by some persons, commence in the soft tissues and extend to the bone. I believe such cases, however, to be rare.

Mr. Fleming states that the navicular disease in some cases may be confined for a long time to the synovial, or rather the fibrous membrane covering this face of the bone without the slightest change being perceptible in the spongy texture; indeed, so dense is the compact tissue that, even in advanced stages of the malady, it yields but slowly to the disintegrating process, and thus protects the more vascular, but less resisting, cancellated structure, until it is itself destroyed. I shall feel exceedingly obliged to Mr. Fleming if he will show me specimens to support this statement. I have some hundreds, but not one that would prove it.

I have stated in my paper that the disease usually commences in the centre of the bone, where the nutrient action is supposed to be lowest. I believe that cases do occur occasionally where the cartilage is the first to become affected by the defective nutrition of the bone, but the disease never becomes extensive without involving the spongy structure

of the bone. Mr. Fleming states that the superior surface of the navicular bone is never affected. I have one specimen before me now in which both surfaces are deeply ulcerated. I will take the earliest opportunity of showing it to him, and any others I may find on examining my collection.

The only reason I can assign for the disease affecting the under surface of the bone, to the almost entire exclusion of the other articulatory surfaces, is, that that face of the bone is the first to become affected when its natural healthy supply of blood is interfered with. Mr. Fleming also says that concussion has little (if anything) to do with the production of navicular disease. I think he will not make many converts to that theory. As we become better acquainted with the process of congestion, inflammation, healthy nutrition, and diverted nutrition, we shall then be better able to prevent disease.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 209.)

Having stated some of the principles connected with what we may now term terrestrial fungi, we would direct attention to some anomalous forms which seem to be entirely aquatic, and we do so to stimulate inquiry into the history of an aquatic plant of obscure vegetable origin, but which, though little be known about it, is yet admitted on all hands to exert a wonderful influence on health, both in man and in the inferior animals.

Most microscopists are aware that in town wells some of the brightest looking waters yet contain a semitransparent fungoid substance, and there are certain diseases constantly occurring where such waters are used as impel the medical adviser at once to state that there is something wrong with the water.

In order to trace the history of this fungus the more clearly we extract the following remarks by Dr. Edwin Lankester, from the *Quarterly Journal of Microscopical Science:*

"In the autumn of 1854 I was requested to examine the well waters in the parish of St. James, Westminster, as some of them, not without reason, as it subsequently turned out, had been suspected of communicating or predisposing those

who took them to attacks of cholera. At the time I examined them, October, 1854, the majority of these waters presented no organic peculiarities. One of them, however, that of Broad Street, Golden Square, and which was afterwards proved to have been remarkably connected with the great outbreak of cholera in the parish of St. James, in September, 1854, presented, after standing a little time, a cloudiness visible to the naked eye. On examining a few drops of this water with the quarter-inch object-glass, the cloudiness was seen to be produced by the flocculent mycelium of a fungus.

"The fungus produced a sporidium, which was at first filled with closely packed spores. After a little time they exhibited movement, and eventually burst the spore-cases and became distributed by their movements through the water."

The learned doctor then goes on to describe a similar occurrence in some suspected water at Cirencester, but, as we were engaged in that inquiry, we will now state our own observations upon the matter.

A gentleman living in the centre of the borough of Cirencester had his whole family attacked with illness, and one child died. The water was suspected, and some of it was sent to Professor Daubeny, and some to Dr. Voelcker and to Mr. Terry of Bath.

Dr. Voelcker reported the contents of two imperial pints as follows:

Inorganic substances . . .	6·94 grains.
Organic matter	0·37 „
	7·31

Dr. Voelcker considered that, as far as it was chemically concerned, the water was a wholesome drinking water.

Mr. Terry said—"I have been able to discover no trace of sulphuretted hydrogen nor ammonia in the water. The fresh water under the microscope gives evidence of much vegetable growth."

Now, upon inspecting the pump, we found that its leaden mouth was coated with an opaque gelatinous substance, which appeared to be but agglomerated masses of the mycelium of the fungus, of which loose flocculi, as figured from our drawings in the illustration in Dr. Lankester's paper before referred to, had previously been found floating in the pumped-up water.

On examining other wells in the town we found the same fungus; and as at that time a kind of low fever was some-

what prevalent, it is not to be wondered at that the medical men attributed much of the illness to the water, especially when it is known that the substratum of forest marble clays is covered up with a porous gravel. The water wells, then, are dug in the clay, and the so-called "dry wells" are sunk in the gravel, and hence, then, all the matter that finds its way into the dry wells is percolated into the water wells; and this is doubtless the source of impure water, not only in this, but in many similar cases. It hence follows that, as originally towns and villages were usually planted on streams because the water was good and abundant—but this is ruined by drains to the rivers—so, little advance soon showed that here and there water could be obtained by sinking wells, and Cirencester, the ancient Corinium, still possesses several wells made by the Romans; but, alas! long percolation has vitiated this once pure source of water supply.

Now, not only here, but everywhere, a still advancing civilisation demands that water be brought from a distance; and we hope at no distant date to find all our towns and most of our villages obtaining their water from pure but more or less distant streams—streams free from the contamination of population.

At present much objectionable matter is taken from Cirencester by a general system of sewerage, and we refer to this in order to point to the significance of the following facts.

On examining the exit of the sewage water at Cirencester, and subsequently at Croydon, we observed that sticks and projecting materials in the stream were more or less charged with a flocculent gelatinous matter. This matter, under the microscope proved to be the same fungus as that found in the wells; and the exits of drains into the Thames and Severn, in the neighbourhood of towns, will be found to be more or less charged with the like fungus. It hence follows that if water containing these be deleterious in the one case it will be in others, and if it be really true that such water does produce disease—even if periodically only—we have, in a microscopic examination, a ready means of detecting the source of the mischief.

That it does so we may gather, not only from the cases already mentioned, but from one of a more recent date, which we at once proceed to detail.

As poor-law guardian and visitor to the workhouse of the Sherborne Union, we were called upon by a note in the house-surgeon's book to examine the state of the well and the drainage of the premises. In the first place, some defective

sinks were observed, and at once ordered to be remedied The well water was found to be deficient, and when near the bottom became turbid; when in plenty it was clear and bright. Its taste was not objectionable, and chemical tests gave no indication of deleterious principles, except that organic matter prevailed; but on subjecting some of the water to microscopic examination the "sewage fungus" was at once apparent, and the facts revealed by this instrument fully justified the following observations of Dr. Lankester:

"Not one of the least important services rendered by the microscope is the facility with which the presence of organic matters, especially when living, can be detected by its agency in positions where chemical analysis fails to recognise such compounds at all. This is remarkably the case with the lower forms of animal and vegetable life, which inhabit fresh, mineral, and marine waters. Some of these animals, as, for instance, the jelly fishes, which are large enough to be seen by the naked eye, and even to present creatures of formidable dimensions, are scarcely recognisable by chemical analysis in the waters in which they have existed. Such facts as these seem to indicate that the microscope may be successfully employed in investigating waters which may be suspected of containing deleterious matters, or of determining the presence of agents injurious to health. It is true that our knowledge of the forms of microscopic life which may be injurious to health is very limited, but sufficient is known to stimulate further inquiry, and to prompt further efforts to identify special organic forms with the unfitness of water for dietetical purposes."

It was just this conclusion, which we had arrived at some years since, that induced us to examine the union well more minutely, and, having first ascertained the presence of organic matter in the water, to ascertain whence it came, and it was soon found that, as it oozed in down the sides of the well, it could only come from percolating from drains and cesspools, here, too, made less deep than the wells in a porous stratum. This, on being put right and all sources of contamination excluded and the well deepened, was speedily followed by a clean bill of health, in as far as fever was concerned.

Our own family all succumbed to fever in one of the healthiest spots in the country, when our medical attendant was at once down upon the water; and here, too, the microscope demonstrated the sewage fungus. This in a well 125 feet deep was difficult to account for, but it was subsequently ascertained that a drain was made to run near the top of the well; it leaked, and it is satisfactory to note that, this fault

being detected and mended, no trace of the same class of disease has since manifested itself.

Nothing, then, appears to us to be more clearly established than that certain effects follow the use of water in which fungal matter is found, but whether these effects are the result of certain chemical changes, fungal or other poison, is not so clear; but it is important to know that we are able to detect the source of the mischief, and that when we have removed or prevented the access of the matter by which the fungi are produced such mischief speedily ceases.

In an agricultural point of view, the substances which do so much mischief in being allowed to fester beneath our towns and to contaminate the wells assume an importance which cannot be well over-estimated. Sewage waters, so mischievous if not got rid of, are now found to contain fertilising matters of great importance. Croydon and other large towns are at present utilising sewage matters, and on a visit to the former place we were pleased to see that while the sewage of the town, where it first enters upon the soil, is highly charged with the sewage fungus; the sticks and grasses in the carriers are covered with whole masses of this substance, but after percolating through the soil the exit from the carriers will be found to contain water all but pure, in which fishes and the usual plants of pure streams will be found to do well—a circumstance never to be observed until the soil had absorbed the chemical substances by which the fungus is produced. The result is, besides purification, the production of enormous crops, especially of grass and roots, and this without any additional manure whatever, and with the result that the value of the land has increased a hundredfold.

Thus it is that effete animal matters are converted into wholesome vegetation, and by this means, while the food of the people is increased, many virulent diseases are checked; and, as shown by statistical returns, when this or any other efficient means of carrying off sewage is adopted, the death-rate is very considerably diminished. We are yet far from knowing the natural history of the fungoid substance referred to; its real relationship, or whether there be few or many species, has not been determined, but sufficient is known to enable us to conclude that these almost invisible agencies exert a most decided influence on the animal economy. But further, there is reason to think that the sporules of fungi floating in the air are a constant source of mischief, as stated by that learned fungolist, the Rev. M. J. Berkeley:

"Fungi were long regarded as the mere creatures of putrescence, and therefore as the consequence, not the cause, of

disease. A more intimate acquaintance with their structure and habits has, however, removed much of this prejudice, and almost every one is now ready to acknowledge what a weighty influence they have in inducing diseased conditions, both in the animal and vegetable world."

Fungi, therefore, must be considered to play an important part of the history of the higher plants as in that of the animal economy, and hence their attentive study may be expected to yield valuable information, both to the vegetable and animal physiologist.

UPON THE PERIPLANTAR SHOE IN CHRONIC LAMINITIS.

By M. Clayton, Veterinary Surgeon, Paris.

For several months you have published in your valuable Journal a great number of articles concerning laminitis and its treatment. The majority of the working members of the profession have expressed their views upon the subject. We believe your columns are at the present moment closed to any further discussion; nevertheless, we trust you will not refuse to insert the following few remarks.

To discuss the general value of the system is not our intention; we should say it is beyond our power—want of experience being our excuse. Our object is to draw attention to one point only, viz. the value of the periplantar shoe in chronic laminitis.

The opinion we profess, and which we desire to communicate to the members of your corporation, is far from a new one. Indeed, it has been, and is still, maintained by many eminent practitioners in this country since the invention *de la ferrure Charlier*.

Laminitis generally ends in a chronic state; the anterior part of the sole (toe) becomes convex, and consequently protrudes more or less over the inferior border of the crust. It little matters, for the subject we are examining, whether the fall of the bone behind downwards is due to the conical-shaped mass of horny matter comprised between the inferior face of the crust and the anterior face of the os pedis, or to the traction on the part of the flexor tendons, as an honorable author lately asserted in an article published in the *Veterinarian*.

In some cases the convexity is so prominent that the

weight is entirely supported by the posterior region of the frog, during the first period of the tread, and then by the prominent anterior part of the sole, the inferior border of the crust very seldom reaching the ground. When such a pathological state exists, what treatment should be selected? The only efficacious means consists in the application of a shoe adapted by its form to protect the sole from injury. But what shoe should be chosen? This question has been solved in very different manners. Unanimity even does not exist upon a point which appears to be a very important one. We think a light shoe is the most appropriate when the foot has undergone such great modifications as those which characterise chronic laminitis.

Another essential point is the protection the shoe affords to the sole of the foot; protection easily obtained by the application of a wide shoe, the advantage of which is, however, destroyed by a considerable augmentation in its weight—beside, the wide shoe must be so disposed as not to bear upon the diseased parts during locomotion. This, again, is only obtained by placing the foot in an abnormal position. In theory we admit the shoe can be so made as to obtain this shape without changing in the least the regularity of the tread. In practice it is more difficult, sometimes impossible, when we have to deal with an unskilful blacksmith, or with one that is not accustomed to prepare shoes for pathological purposes.

In one shoe, exceptionally pathological (the Charlier, for example), are united the qualities sought for. What encourages me to publish this notice is that the Charlier shoe has lately been imported into England, where, if the reports we have examined are exact, it has already made great progress. Since many practitioners are acquainted with it, a trial can be made. We do not hesitate to state that experiments will prove successful.

It must not be forgotten we are examining the shoe as a means of allowing horses suffering from chronic laminitis to continue their work. We have met with many horses so affected, wearing shoes ordinarily made use of in the treatment of the disease above mentioned, which were unable to accomplish their daily tasks, but which immediately walked with greater ease after the application of a Charlier shoe to each affected foot.

The shoe should be deep; very slightly incrusted at the toe, more so at the heels. The depth of the shoe will vary, firstly and principally, with the convexity of the sole secondly, with the size of the horse. The convexity is rarely

so great as to require a shoe more than an inch and a half deep. The sole will thus evidently be sufficiently protected.

The value of the shoe is again obvious in cases of flat feet, or of those which are continually in a congested state.

We do intend to describe the *modus operandi* of the system, for no fixed principles can be laid down. The groove must be more or less deep according to the state of the foot, especially the degree of convexity of the sole.

Our only wish, as we have already stated, is to draw the attention of the English members of the profession to the value of the periplantar shoe as a mode of treatment in chronic laminitis.

CONGENITAL DISTORTION OF THE FORE LIMBS OF A FOAL; OPERATION; RECOVERY.

By Charles C. Grice, M.R.C.V.S., New York, U.S.

Thinking that a short description of a case of malformation of limbs at birth would be interesting to some of the readers of your much respected and faithful record of the state and standing of the veterinary profession, I have forwarded the following particulars for publication, as I consider it not only my duty, but the duty of every member of the profession, to do something for the support of the *Veterinarian* when he has the opportunity, and to report any singular case that is likely to be interesting to the members of the profession.

The foal to which I am about to refer was a choice bred one, the property of the well-known printing-press manufacturers of this city—Messrs. R. Hoe and Co. On July 14, 1869, I was requested by Mr. Hoe to see the animal, then ten days old, at a breeding farm sixty miles from this city. I found that the foal was not able to stand long enough to get sufficient nourishment from the mare without being supported by the groom, as its two fore feet were turned backwards and upwards so as to bring the front part of both fetlock joints in contact with the ground. On reporting the condition of the animal to my employer, he was much discouraged, but sent it down to my place with its dam, that trial might be given to the operation of tenotomy.

The operation was performed on July 26, the patient being first brought under the influence of chloroform, administered by my esteemed friend Professor Liantard, of the New York College of Veterinary Surgeons. The tendons

were divided alternately in each leg, midway between the knee and fetlock joints, a very small scalpel being used, and care taken not to pass it through the skin on the opposite side of the limb.

After the operation some pasteboard, softened in cold water and well padded with lint, so as to be easily adapted to the form of the limbs, was applied, with a linen bandage, to each leg. Simple cold-water dressings were used daily for two weeks, by which time the wounds had healed. Leather boots, made to lace up, were now applied; these being removed every third day, for the purpose of relieving the pressure. The foal was subsequently turned to pasture, and in about six weeks I found the limbs strong enough to allow of the boots being discontinued altogether. After this time the case was left to nature.

About the middle of January I called on Mr. Hoe, when he informed me that the colt's limbs were as perfect as those of any other animal on the farm, and that he hoped I would report the case in the *Veterinarian*, and likewise in our sporting papers. The latter I have not done.

ON THE PATENT ELASTIC HORSE COLLAR.

By J. W. Gadsden, M.R.C.V.S., Philadelphia, U.S.

In the December issue of the *Veterinarian* I find that, under the head "Miscellanea," you notice an improvement in horse-collars by a Philadelphia mechanic. Having an extensive practice in this large city, I have had a good opportunity of noticing the great advantage of this light cork collar over the old heavy kind in use before it. I therefore have a wish to place my testimony before your readers, or they might imagine it had not been practically tested.

The collars are stuffed with "patent elastic cork." They are very light in weight, and readily adapt themselves to the shape of the horse's shoulder as soon as the animal becomes warm; therefore they do not chafe the parts. This is a great advantage over the old collar, particularly in the summer time. They are also very durable, and look well on the horse.

These collars have only been in use about twelve months, and are principally employed by the Passenger Railroad Companies through our streets.

About two years ago I was appointed veterinary surgeon to several of the companies, and had a great deal of trouble

to keep the horses at work with sore shoulders, but since these new collars have come into general use I have had no trouble, as they produce no sores, they fit so well, and are so light.

I must tell you there are over 1000 of these collars in use at the present time by the Passenger Railroad Companies of this city. They are also used for very heavy work (hauling coal) by two large companies here, and give satisfaction. I understand they are also employed largely in New York, Boston, and Chicago.

ECZEMA IN THE HORSE.

By R. M. Holmes, M.R.C.V.S., Kirton in Lindsey.

Thinking the following cases unique and very interesting, I am induced to record them :

On the 26th of December, 1869, I was requested to attend four yearling colts, the property of Wm. Hall, Esq., Jun., Redbourne. I was informed that they had shown signs of indisposition on the 24th, and that the symptoms of ill health were more marked on the 25th. When I arrived at 4 o'clock, on the 26th, I found them in a yard adjoining a number of beasts that were suffering from eczema epizootica, only being parted from them by a post-and-rail fence, and the horses and beasts had to drink out of the same water-trough.

My patients were in good condition, but looking empty, and three of the animals presented the following symptoms : pulse 80 to 100, not perceptible at the jaw, disinclination to move, visible mucous membranes highly injected, anxious expression of countenance, surface of body and extremities cold; signs of abdominal pain (not *severe*), violent purging, with tenesmus ; they refused all kinds of food, except gruel, which was allowed *ad libitum*. Discharge from the mouth, and vesicles appeared on the tongue, which was enlarged, and eventually would coalesce with each other; at first their contents were nearly transparent, but as the disease rapidly advanced the discharge became darker in colour, and in a short time became highly offensive. The tongue was also much congested and swollen, and presented a very dark appearance.

Having enumerated the leading symptoms, I may say that my prognosis was speedy death, which proved correct, as the three cases succumbed to the fatal malady within thirty-

five hours after my first visit. The symptoms varied nothing in the three animals. The fourth was only a mild case, and soon recovered. Unfortunately no *post-mortem* was made.

A professional friend accompanied me on the morning of the 28th, with the intention of making a *post-mortem* examination, but the owner, I am sorry to say, had the last animal buried before we arrived.

I have no doubt but many persons will consider that the disease alluded to in this communication is not identical in its nature with eczema as affecting cattle, sheep, and other domestic animals (*quot homine tot sententiæ*). For my own part, I think the phases are very analogous, and many of its symptoms were presented, although there was an absence of disease in the feet. I believe that the mucous membrane of the alimentary track was affected, as shown by the existence of abdominal pain and watery fœtid fæces.

If you think this communication worthy of a corner in your valuable Journal, I shall be glad to see it in an early number.

[A few weeks ago Mr. Little, M.R.C.V.S., sent us a report of similar cases from the *Rutland and Stamford Mercury*. In neither of the instances recorded, however, are the symptoms those of foot and mouth disease. Hitherto there is no satisfactory evidence of the horse being susceptible to this malady.—Eds.]

THREE CASES OF FRACTURE OF THE TIBIA.

By Alex. E. McGillivray, V.S., Banff, N.B.

Observing in last month's *Veterinarian* an interesting report of a case of fracture of the *tibia* by "Quæsitor"—who winds up his report by stating his belief that many of the readers of the *Veterinarian* may feel sceptical as to its having been a case of *real* fracture—I consider it my duty to make public three similar cases of fracture which have come under my notice; two of them within the last six years.

Case 1.—In the month of May, 1864, being at that time in practice with my father, we were called to see a heavy four-year old draught horse, which had suddenly gone dead lame. On examination we found it a clear case of *simple* fracture of the *tibia,* near hind leg. The fracture was from the

lower portion of the upper third of the bone anteriorly, obliquely downward and backward. No displacement having taken place, we immediately had the horse slung, the broken limb rendered, as far as possible, immovable, and applied cooling lotions.

In four weeks the improvement was so great that the owner caused one of his sons to unsling the horse, and take him out, and next day put him to some gentle work. The consequence was that the newly united fracture gave way, and the poor brute, through the owner's rashness, had other seven weeks of the slings to endure : at the end of which time, however, he was discharged almost sound. Of course, owing to the fresh breaking up of the fracture, a good deal of exostosis existed along the line of the union, which, however, after a blister somewhat decreased, and the slight lameness entirely disappeared. In this case, as in that of "Quæsitor," the bones were not displaced, but the bony enlargement remaining clearly showed the diagnosis to have been correct.

Case 2 occurred after I came to this district, in the month of June, 1865. A favorite black Clydesdale mare, belonging to a landed proprietor near this, was found one morning standing in a corner of the park, in which, along with her fellow, she was accustomed to remain during the night, with an extensive and deep cut or tear immediately below the stifle joint. On being called, and after minutely examining the wound, I found it to be what is called *a compound comminuted fracture ;* for not only was there evidently a fracture, but there were also several small detached pieces of bone to be felt. I had the mare immediately, and as gently as possible, removed home to the farm steading, cleaned the wound well out, opened it well down to the bone, and dissected out three small pieces of detached bone, somewhere about the tibial ridge, anteriorly on the upper third of the bone. I then drew the edges of the external wound firmly together with fine metallic sutures, planned and applied a cradle of splints to the leg to prevent, as far as possible, any motion, ordered cooling applications externally, and Potass. nit. and Antim. tart. internally.

At the end of eight weeks the mare's leg was nearly as well as ever it was, with the exception of a small enlargement and occasional purulent discharges just opposite the place where the three pieces of bone were excised ; two smart applications of Ung. hydrarg. bin. iod. got rid of both the enlargement and discharge. At the present time, a casual observer would fail to distinguish which leg was fractured. In this case, also, notwithstanding the shattered state of a

small portion of the bone at the superior and anterior part of the fracture, the actual displacement was scarcely perceptible; and this was the more to be wondered at when the frightful external wound was looked at.

Case 3 occurred about fifteen years ago in a well-bred bay mare, the property of a sporting gentleman in Aberdeenshire. My father was called to this case, and considering it, from all the symptoms, a fracture of the tibia, had the mare slung, &c., and left word that, owing to the owner's absence, he would attend again next day. The owner returned same night, however, and finding his mare in slings with (as the groom told him) a broken leg, got in a towering passion, examined the leg himself, found no signs of such a thing as a fracture, ordered the mare to be taken out of the slings, and turned into a small park near the stable. Next morning the mare was found standing at the park gate with the leg swinging about, quite useless; the pieces of the bone making the fracture had become displaced, and the end of one of them was sticking out through the skin. The poor mare was immediately shot.

Remarks.—In recording these cases I have not thought it necessary to give the symptoms exhibited, as they were precisely similar to those so explicitly detailed by "Quæsitor;" and I have no doubt but many a practitioner could bring forward like cases of the diagnosis of which he had not the least doubt. Fracture of the tibia *in cattle* is very common; I had three cases of it during the last season, and they all did well. In such cases, however, complete displacement almost always takes place, and it is sometimes a difficult matter to get the fracture properly placed or *set* again.

FRACTURE OF THE OS PEDIS.

By J. B. Coleman, M.R.C.V.S., Sheffield.

An accident, involving fracture of the pedal bone, having recently occurred in the practice of the veterinary surgeon with whom I am engaged—Mr. Cartledge—I have been led to think that, in consequence of the exceptional nature of the fracture, and the specimen being unique in his collection, a report of the case would not be utterly devoid of interest to the readers of the *Veterinarian*.

The animal which sustained the injury alluded to was a powerful cart-horse, which was daily employed in the process of shunting railway trucks. Whilst so engaged, one of his

hind feet became entangled with the rails, and not being able to extricate it quick enough to avoid contact with the loaded truck to which he was attached, the truck moved forwards with such force as to cause a complete separation of the entire hoof, together with portions of the pedal bone and the sensitive structures covering its under and outer surfaces, as well as the whole of the sensitive frog, from the other parts of the extremity. The secreting or sensitive tissues having thus been for the most part torn away, no hope could be entertained of the reproduction of the hoof, if the unfortunate animal were allowed to live, and consequently he was at once destroyed.

A case of a similar character is recorded by Mr. Cartledge in the first volume of the *Veterinary Record*. In this instance the hoof was, however, detached in such a manner as to cause but slight laceration of the sensitive laminæ. The treatment had recourse to was followed by a rapid reproduction of the hoof, and subsequent restoration of the animal to his former condition of usefulness.

I would remark, *en parenthése*, that the observations recorded by Mr. Cartledge upon this case, which was then said to "stand alone in the annals of veterinary science," with reference to the agencies concerned in the reproduction of the hoof, fully bear out the views advanced by Mr. Broad in his article on the "Physiology of the horny laminæ and wall of the Foot of the Horse," published in the May number of the *Veterinarian* for 1867, in opposition to the opinion enunciated by Mr. Greaves in the previous number. The latter gentleman contended that the whole of the horn-structures proceeded from the coronary villi *alone*; while it was maintained by Mr. Broad that not only were the coronary villi employed in secreting the constituents of the horny fabric, but that the vascular and sensitive laminæ were also endowed with and exercised similar functions.

A VOICE FROM THE PROVINCES ON THE PRELIMINARY AND PRACTICAL EXAMINATIONS.

By M.R.C.V.S.

It must not for one moment be assumed that the provincial practitioner ceases to take an interest in the outward progress of his profession as soon as he has received his diploma and has quitted his alma mater. There are very

few men indeed who, entering upon the anxieties involved in general practice, whether it be in a purely agricultural district or in a provincial town, do not retain within themselves to a greater or less extent the longings or yearnings planted in them by "love of profession," to see the advancement of that profession in which the character, living, and even life itself of themselves and families are so closely bound up. If it was not for the information contained in that monthly journal, the *Veterinarian*, and the annual meeting of the profession held in Red Lion Square, which some of the provincial practitioners attend, the charter would be a dead letter to us all. The labours of the Council and all those in authority who assume the general supervision of our profession would be a dead letter to us entirely. Every month for over thirty years I have watched for my *Veterinarian* coming, and read its contents with more or less profit and interest. I watched with intense interest the progress of that indomitable band of men as they struggled for and obtained our charter of incorporation; I witnessed with intense pain and sorrow the disunion and disruption of that gallant band, the humiliation and evil consequences our profession has suffered from it. I felt, and still feel, that the Council were then in the wrong, and, as Professor Spooner and Mr. Walter Mayer have since over and over again enunciated, that Professor Dick was at the time a very ill-used man.

I have witnessed many isolated attempts by worthy men to make some advance in our profession, but after some ineffectual efforts they have become disheartened and given it up. I witnessed with great anxiety the application to Parliament for an Act; I read every word written for and against it, especially about the fourth clause, and deplored its withdrawal after it had passed its second reading. Also I noticed the attempt made by the Highland and Agricultural Society of Scotland for a charter for Scotland, and its failure. I have witnessed all these things and many more. My mind has followed the deputation as they stood before the Governors of the Royal Veterinary College, and before the Trustees of the Edinburgh Veterinary College; my heart has bounded with joy and gladness at the courteous reception they met with from those two bodies of gentlemen, how heartily they espoused the cause. To my mind there has not been a single measure brought forward of equal importance to either of those two great and invaluable measures which are at this moment, and have been for some time past, occupying the attention of the Council of the Royal College

of Veterinary Surgeons and its committees, viz., the preliminary examination of the youth, and the practical examination of the student. I consider there are no questions that contain within them the germs of such great and lasting benefits to the profession and the public, if only they are properly arranged and faithfully carried out. Nothing has equalled them in grandeur and intrinsic usefulness since the charter was granted. For how, let me ask, can an Act of Parliament metamorphose the profession, however stringent its clauses may be drawn up, in order to put down non-qualified men and quackery, so long as a class of men are admitted into the profession who are continually bringing down disgrace on themselves and on the profession to which they belong, in consequence of being themselves grossly illiterate men, whose intellects have never been cultured, whose minds are so obtuse and stunted that their mental powers are incapable of comprehending the simplest facts in science, and after they have listened to lectures over and over again their teachers find that their intellectual faculties are like the barren sterility of the bare rock, that cannot receive the roots of any plants.

Would it not be much better to reject such men at first rather than after they have spent their money and two or three years of time at college? It would then become known throughout the land that education is a necessity in the case, all parents would become aware of it, and all youths would come prepared by having acquired a good sound English education. I verily believe there is not a thinking man either in or out of the profession but would say that the preliminary examination of the youth, as it is so laudably adopted at the Royal Veterinary College, is an indispensable necessity. It must be arranged and faithfully carried out at each of the three veterinary colleges forthwith; nay, this must inevitably be so, because the Governors and the Professors of the Royal Veterinary College, the Trustees and Professors of the Edinburgh Veterinary College, the Principal of the Glasgow Veterinary College, and the Council of the Royal College of Veterinary Surgeons, are all fully alive to its necessity and importance, and are most anxious to carry it out.

There is another class of men who possess a satisfactory education, but who are grossly deficient as to their practical knowledge; they, too, are constantly bringing down disgrace on themselves and upon the profession to which they belong. As regards the equally important question, viz., the practical examination of the student, I verily believe there is not a man living who has any pretensions to common honesty and common sense but will say, before any student is granted a

diploma purporting that he is qualified to practise the art and science of veterinary surgery, "he should be shown and carefully taught how to do anything in connection with every kind of case he may hereafter be called upon to treat." I am not now discussing the question when or where he should acquire this knowledge, or who should teach it him, but this I say most emphatically, he ought to be in actual possession of the knowledge, or else he should not have a diploma granted him; neither the Royal College of Veterinary Surgeons, nor any other body of men who may have the slightest regard for their character, or are desirous of making good their claim to the title of honorable men, can grant diplomas to men in whom there is an absence of that knowledge which your diploma vouches for them possessing. The Council and Court of Examiners have a plain and sacred duty to perform, and the profession generally expect them to perform it properly. I care not where, when, or how, the deficiency has happened, whether it is because the student has never received a practical education in his youth as an apprentice, or whether it is because he has never been practically instructed whilst matriculating at the college. I maintain, the plain, simple, and bounden duty of the Examiners and the Council of the Royal College of Veterinary Surgeons, as conscientious and honorable men, is to withhold their signatures from any certificate or diploma until they are quite satisfied the candidate possesses the knowledge that such certificate or diploma vouches for. There are means for getting at the knowledge assumed to be possessed by the student only by the practical examination test. Is it not perfectly natural to suppose that the student who is unable to answer simple questions or perform simple duties on the horse or cow before the examination to-day, will be equally unable to answer simple questions or perform simple duties on the horse or cow before his employer or the public to-morrow, after he has got his diploma?

I find in France and throughout the continent, in Germany and Prussia, &c., the preliminary examination is not adopted because every child there is given a sound, substantial education; compulsory education is the law of the land. But at Alfort and at Lyons, and at all the German schools, Berlin, Dresden, Stuttgart, &c., the practical examination on clinical subjects is the universal custom, is very strict, and lasts over many days; all students are required to perform different operations in the presence of the examining board. I would respectfully suggest to the Council that the examiner should take the student on any or all the following subjects, get

through as many of them as the expertness of the student will admit of; of course an opinion is formed from the manner the student approaches the horse or the cow, and the way he proceeds. I think the examination should extend to half an hour, or thereabouts, with each student.

Examination on the Horse.

The student shall be assisted by competent men. He may be asked to examine a horse's mouth and state his age, examine the horse's molars, give a ball, give a draught, take up a fore foot and also a hind foot, as in the act of shoeing, take off a shoe, pare out a foot properly, examine a foot in a workmanlike manner, point out the various situations to bleed from, the situation to perform œsophogotomy, tracheotomy, trephining the various cavities of the head, take the horse's pulse, put on a set of bandages, put on the hobbles, the side line, the single line, to diagnose disease, to dispense medicine, to examine a horse as to soundness, and write a certificate.

Examination on the Cow.

The student shall be assisted by competent men. He may be asked to examine her teeth and state her age, examine her udder and state whether she has had a calf; he may be asked to approach her and hold her by the horn or nose, be requested to give her a ball, to give a drink, to put the gag in her mouth, to introduce the probang, to point out the situation and mode of puncturing the rumen, explain how he proceeds to bleed a cow, put on the trusses, take up a fore foot, explain how he would proceed to take up a hind foot to dress for foul in the foot, explain her attitudes in various diseases, dispense medicines. The examination to extend to half an hour, or thereabouts, in every instance.

Professor Williams informed the profession at the last annual meeting that the Highland and Agricultural Society of Scotland had adopted the practical examination at the Edinburgh Veterinary College for the last three years. It has also been the custom all along in the examination of a candidate for the army; and I am told that the two Scotch colleges are perfectly willing that the practical examination test shall be brought into action at the forthcoming examination of their students by the Scotch section of the Board of Examiners of the Royal College of Veterinary Surgeons. But it was not without sorrow I found from the last Report of the Council that the London College is not agreeable, or is not prepared, to have this test brought into action at present with respect to their students. At the last annual meeting a

member of Council put forth an opinion "That there was not a chance of having them, there were so many difficulties in the way, he did not think they could be carried out." But when this test is demanded by the advancing spirit of modern intelligence, he must not shrink from any apparent difficulties, or the dread of encountering facts which may militate against his prepossessions, or may seem unfavorable to the desired conclusions; he cannot shut his eyes to the accumulation of evidence on all sides, and on the result of the investigation the independent inquirer will with equal fearlessness use his own judgment.

The fact is, it is one of the simplest, easiest, and most practical things in the world to carry out—the thing is done every day without the slightest difficulty; in short, there is no difficulty, only that which exists in the imaginations of the objectors, and which they themselves create; if only there was the disposition, every difficulty which they represent as being so formidable would at once vanish into thin air. The opinion of many at the last annual meeting was that this member of Council was tainted with one of the heresies of Thomas a Didymus; he made himself the subject of incredulity and even ridicule; his logic appeared as futile as the finger of a child on the spoke of an engine's driving wheel. The declaration will appear to men of modern tempers more and more incredible the longer and more minutely it is dwelt upon. Why hug the delusion any longer? The Council and their President are only worthy of esteem and honour as they know what is just and proper to be done and dare to do it; at the present time the meetings of Council appear to be more numerously attended, and the reports given of its doings are much more extensive than have ever been given before; and it also appears there are a greater number of members who entertain the opinion that it is indispensable to carry these two measures to their final completion; these measures have made more real progress of late, and have arrived at a point nearer to a satisfactory settlement than they ever attained before. The members of Council appear more united than they ever were before: let them take courage and set their hearts with a firm resolve to carry these two important measures; they are measures that are demanded by society, and let the Council feel assured they are backed by the great body of the profession in the provinces, and recollect the trite saying of the late Mr. Litt, that the veterinary surgeons of the provinces are the backbone of the profession.

I believe I am right in my opinion, viz., that now the

various committees, the deputations, and the Council itself, having over and over again affirmed the principle, now stand pledged before the whole profession, and are bound to carry it out whatever difficulties or assumed difficulties are put forward to oppose them; let no subterfuge of any kind be put in the way of its fulfilment, let no member turn traitor to the cause, be an obstructionist or discordant, placing himself athwart the path of progress; let there be no Adullamite cave in the Council.

If the present members of Council have not got deep, strong, and firm convictions, or have not got moral courage sufficient to enable them to stand to their colours, and announce their conscientious opinions regardless of the frowns or smiles of any man or any party, let them, I say, resign their trust to others who have stronger convictions, and have also a clearer sense of duty.

Pathological Contributions.

CATTLE PLAGUE.

According to the latest information received from Memel and Warsaw, precautionary measures were still in force to prevent the entrance of the cattle plague into the province of East Prussia or of Posen from either Russia or Poland. The frontiers were carefully guarded by troops in addition to the other means adopted by Prussia against the introduction of the disease. Galicia, Buckowina, and Transylvania are not yet free from the plague, but Hungary, it was hoped, had succeeded in again stamping it out.

We have also received information from Trebizond and Erzeroum to the effect that the disease was declining in this part of Asiatic Turkey, but chiefly in consequence of the numerical diminution of the cattle.

FOOT AND MOUTH DISEASE.

Excepting in Lombardy, where the malady was still widely spread, the reports from the Continent show that a considerable diminution has taken place in the attacks of the foot and mouth disease. Its introduction into Lombardy is said to be

due to infected cattle being sent from Switzerland. In Ireland the disease has reappeared, and the cows in the Dublin dairies are suffering severely from the outbreak. The disease has also made its appearance in the county of Kildare, in the midst of a grazing district.

The number of centres of the affection in Great Britain continues to lessen, but there are still fifty-four counties more or less affected. In some places the disease has assumed a malignant form, and several calves and young pigs have died of it.

PLEURO-PNEUMONIA.

A FURTHER decline has taken place in the number of centres of pleuro-pneumonia since our last report. The disease has existence in fewer counties, and the number of animals attacked is also less than during the past month. In the London dairies an increase has, however, been observed. Pleuro-pneumonia is likewise reported to have shown itself in some fresh places in Holland and Pomerania. In Ireland the malady is still very rife and fatal.

SCROFULA IN A COW AND PIG.

WE are indebted to Mr. Stock, M.R.C.V.S., Lewes, and to Mr. E. Taylor, M.R.C.V.S., Bury St. Edmunds, for some interesting specimens of scrofula in the cow and pig. The former gentleman writes that he was called to make a *post-mortem* examination of a cow which was thought to have been the subject of pleuro-pneumonia, and that on opening the chest he found the lungs, heart, and serous lining of the cavity, one mass of disease from adventitious deposit of a scrofulous nature.

It was with much difficulty that the heart and its coverings could be separated from the lungs and the rest of the mass, but on this being done, the heart was found to weigh 26 lbs., and the lungs upwards of 52 lbs.

The deposit had taken on a columnar form on the pleural surface of the lungs, due probably to the pressure exerted by the ribs during its formation. It was remarkably hard, gritty to the feel, and of a yellow colour, and appeared to be "part and parcel" of the ribs. On other parts, and particularly at the apex of the heart, the deposit had a nodulated character.

The animal was an aged one, and had long been known to be suffering from thoracic disease.

Mr. Taylor says in his communication, "I have sent you a specimen of cancer of the liver and spleen of a pig, which may probably prove interesting. The animal, which belonged to a friend of mine, was killed yesterday, March 11th, being, as was believed, in a perfectly healthy condition. It was fat, and weighed 8 stone—14 lbs. per stone. The attention of the butcher was drawn to the morbid state of the liver and spleen, and these organs were consequently sent to me for examination.

"The spleen, as you will observe, is the most diseased, being studded with nodules of the size of a hazel nut, to the extent of about sixty in number. The liver is dotted throughout with white specks, mostly about the size of millet seeds. They are visible on the external surface, as well as in the substance of the organ.

"The nodules on the spleen are hard to the touch. They apparently contain bone earth, as they feel gritty and cut with a grating sound, especially in their central parts. This gritty matter will be found to effervesce on the addition of nitric acid."

The microscopic examination, which was made by my friend Dr. Ferrier and myself, revealed the existence of numerous pissiform and spherical-shaped cells, with well-developed nuclei, many of which were greatly enlarged. The appearances altogether were characteristic of cancer.

[Both the tumours on the spleen and the diffused matter in the liver had the same histological characters. Much fibrous material was found to be mixed with nucleated cells. The cells were chiefly circular, but others had an irregular outline. No true caudate cells were, however, to be detected. The general character of the deposits, as well as their microscopic appearance, would lead to the inference that they were scrofulous rather than true cancerous, in the ordinary acceptance of these terms.—Eds.]

GLANDERS AND FARCY.

Four or five months ago we called attention to these diseases, and stated that numerous cases were known to be existing among the horses in several large establishments in the metropolis, as well as elsewhere. Since then our apprehension of the spread of these loathsome maladies has been fully realised, and at the present time glanders is more rife than

it has been for the past two or three years. Much secrecy is observed with regard to the disease; notwithstanding which nearly a score of glandered horses are known to have been sent to the knackers in one week at the beginning of the past month. The General Order of Council made under the Contagious Diseases (Animals) Act requires that notice should be given of the existence of glanders and due care be taken to prevent its spead; notwithstanding which it is evident that the provisions both of the Order and the Act are, in many instances, totally disregarded by the owners of glandered horses. A few prosecutions would do much to remedy this evil, and these we hope to find will be instituted by the Local Authorities.

MEASLY PORK.

The parasitic disease of the flesh of pigs, commonly known as "measly pork," is attracting considerable attention in consequence of the large number of cases which have recently been detected by meat inspectors. At Sheffield, a pork butcher has been fined forty shillings for having in his possession a quantity of diseased meat, and another person in the same town has been fined five pounds and costs for converting "measly pork" into bacon and hams, which had been bought professedly for boiling down for grease.

Many of the foreign pigs which reach this country from Eastern Europe—known in the trade as Hungarian pigs—have been found to be affected with this parasitic disease. Much of this kind of meat is converted into sausages, and sold in the poorer parts of the metropolis. Long exposure to a high temperature in cooking will destroy the parasites, but too often this is neglected, and hence we may look for an increase of cases of tapeworms among the inhabitants of such districts.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"Return of the number of foreign animals brought by sea to ports in Great Britain, which on inspection on landing, within the month of February, 1870, have been found to be affected with any contagious or infectious disease, specifying the disease, and the ports from which, and to which, such

animals were brought, and the mode in which such animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Antwerp...	London ...	Foot-and-Mouth.	...	...	...	48	48	48
Dort	London ...	„	3	...	...	...	3	3
Hamburg .	London ...	„	1	...	...	...	1	1
„ ...	Hartlepool	„	8	...	...	...	8	8
Harlingen .	London ...	„	6	...	...	...	6	6
Nieuwe Diep	London ...	„	4	...	...	...	4	4
Ostend ...	London ...	„	...	...	...	27	27	27
Rotterdam	London ...	„	3	...	...	...	3	3
	Total ...		25	...	...	75	100	100

" ALEXANDER WILLIAMS,

" Privy Council Office, Secretary.

" Veterinary Department, 14th March, 1870."

Facts and Observations.

Smallpox and Vaccination in Paris.—The prevalence of smallpox in Paris has been attended by a failure in the supply of vaccine matter. The Government has, therefore, granted the Academy of Medicine 2000 *francs*, in order to keep up a supply from the heifer. The Municipal Council of Paris, on the proposal of the Prefect of the Seine, has voted 10,000 *francs* for the organisation of a system of gratuitous vaccination and revaccination at each of the *mairies* of Paris. The Prefect has given notice to each of the mayors of Paris that, on and after March 2nd, and throughout the prevalence of the present epidemic, vaccination from the heifer will be performed at each *mairie* in turn. The inhabitants of Paris are availing themselves of the opportunity to a very great extent. On one morning in the second week of March, as many as 2000 persons presented themselves for vaccination at one *mairie* alone.

A New Point of View for "Hygiene."—M. Bouley, on presenting to the Académie des Sciences a new book by M. André Sanson on the 'Hygiène des Animaux,' described it as written from quite a new point of view. The author does not occupy himself so much with the means of preserving the health of animals as with the means capable of rendering them healthy or diseased, to the extent most conducive to the profit of their proprietor. It is, therefore, a treatise on hygiene devised from the point of view of the breeder, not of the animal.—*Med. Times and Gazette.*

Wholesale Poisoning of Foxhounds.—On Wednesday morning, March 9, as Mr. Gerard Leigh's (Hertfordshire) foxhounds were being taken from the kennels along the highway between Luton and Silsoe, seven of the number ate something on the road, near the village of Barton, and all died within three minutes. A similar circumstance happened near the same spot about a year ago, and it is supposed that poisoned food had been maliciously laid in their way by some local enemy of the chase. Great indignation is felt among the members of the hunt, and efforts are being made to discover the perpetrator of the supposed cowardly and cruel outrage.

[It is not improbable that the poison was strychnia. Professor Tuson informs us that he has recently detected this agent in the viscera of two hounds which had been sent him for analysis from Sussex.—Edts.]

Royal Commission on the State of Science.—*Nature* has been informed that it is probable that Dr. Sharpey, Prof. Huxley, and Sir John Lubbock, will be among the members of the Royal Commission to inquire into the present state of science in this country.

Butter from Thames Mud.—The difficulty of arriving at the real truth in this matter lay, primarily, in this—that the Frenchman's process is a secret, and we could not expect him to disclose it for the benefit of the public. He has, however, we are happy to say, complied to an extent with our expressed wishes by supplying specimens of the fat which he states were derived from the Thames mud for analysis. These specimens we have placed in the hands of the well-known analyst, Dr. Muter. We have also obtained from an independent source four specimens of mud taken from the south bank of the Thames at four different points, which have likewise been submitted to Dr. Muter, and he has favoured us with the following report:

'South London Analytical Laboratory, New Kennington Institute, 289, Kennington Road, S.E.

"Report on four samples of Thames mud, and two samples of grease, stated to be manufactured therefrom, received from the Editor of the *South London Press*:

"'The mud was found to be capable of yielding fatty matter in the following small proportions:—

No. 0.—Battersea	0·080
No. 1.—Custom House	0·170
No. 2.—Southwark Bridge . . .	0·136
No. 3.—Dowgate Dock	0·060

"'The grease was very dark in colour, offensive in odour, and, from the nature of the impurities it contained, it was evidently extracted from some waste material containing silica and earthy matters. About 80 per cent. of it was pure fatty matter, and it bore a resemblance in odour to some fat extracted from the mud, but was not identical in composition.

"'On the whole, as I doubt very much if the trifling proportion of grease existing in the mud alone could ever be profitably extracted without adding some other source of fatty refuse, I can only fancy that your informant kept back part of the truth as to its origin, and I am quite certain that it is entirely unsuitable for the adulteration of butter, as it is so different from that substance.

"'John Muter, Ph.D., M.A., &c.,

"'Author of 'Popular Food Analysis,' &c.

"'*March* 17, 1870.'"

—*South London Press.*

Studies on the Sewage-Water of Paris.—M. Chevalet.—From this paper we learn that the portion of the sewage soluble in water (the solid muddy deposit is converted into a kind of dry manure) contains by far the larger quantity of valuable ammoniacal salts, and retains in suspension nitrogenized organic matter, which it is never possible to obtain precipitated; there remains, moreover, similar organic matter in solution. The quantity of soluble ammoniacal salts amounts to 3·371 kilos. to the cubic metre of sewage, and, in addition thereto, it contains 640 grms. of azotised organic matter.—*Journal of the Society of Arts.*

An Inch of Rain, so often mentioned in meteorological reports, means a gallon of water spread over a surface two feet square; in other words, an inch of rain means a fall of 100 tons of water upon an acre of land.—*Ibid.*

Increase of Vipers.—A correspondent of the *Journal des Connaissances Médicales* writes to say that vipers have multiplied enormously during the last few years, and that this is owing to the merciless destruction of the hedgehog, which is the natural enemy to all snakes, the venom of which produces no effect upon it.

THE VETERINARIAN, APRIL 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

THE ADMISSION OF PATIENTS TO VETERINARY HOSPITALS.

AT the risk of perpetrating a plagiarism we must remind our readers that opinions upon any given subject are certain to differ according to the stand-point of view from which the subject is regarded. If everybody were to discuss controversial questions in exactly the same state of mind and feeling in respect to their nature and bearing, of course everybody would come to precisely the same conclusions respecting them; all this sounds, and is indeed, very commonplace, but nevertheless it is pertinent to the present question, which has hitherto always been looked at from two opposite points of view.

Some of the members of the veterinary profession practising in London have, ere now, more than once complained of the injury which is done to them by the reception of patients at the Royal Veterinary College; it is only a fair presumption, therefore, that any attempt to attract a large number of sick animals by remitting the usual fees would be unfavorably received by many who look to immediate results from a pecuniary point of view. It is not our intention to complain of this, because there is a certain amount of cogency in the arguments which have been advanced by those who contend that the colleges which receive fees from men for the purpose of teaching them a profession, by the practice of which they may live, are morally bound not to appropriate to themselves the patients which should be distributed among their graduates. This is merely one view of the question, and in itself it is not easily answered; but there is another view which involves a conclusion exactly opposed to the first one. It cannot, for example, be denied that clinical practice is for the pupil not only a very important, but even essential part of his professional education.

This point being admitted, it follows that no college is competent to instruct its students effectively until it has succeeded in obtaining ample means for clinical tuition, and in this view of the subject the admission of free patients is quite desirable even if it can be shown that it is not indispensable.

Again, there is a palpable advantage gained by the reception of gratis patients, as they may be termed, in so far as they are certain to consist, for the most part, of animals of inferior value, and which may therefore be, without hesitation, placed in the charge of pupils who could not be permitted to practise upon the more valuable patients. This last statement is advanced simply and plainly with a full recognition of the extent of misapprehension to which it is calculated to give rise. The popular prejudice against hospitals was formerly, and in some degree is now, bound up with the firm belief that the sole object of the authorities in providing receptacles for the indigent sick, was to afford young doctors subjects on which to "practise." In the case of veterinary infirmaries we do not scruple to admit that this is the primary reason for the admission of horses and other animals without charges to those owners who cannot well afford to incur them.

Having allowed so much, we must proceed to explain what we understand by "pupils practising." It is hardly necessary, in the first place, to clear the way by the remark that idle, unmeaning, or cruel experiments are not included; the idea that giving various medicines for the mere purpose of seeing what effect they will have upon the disease is "practising" is certainly not held by scientific men, and perhaps by very few unscientific men, excepting those who are quite illiterate. What we mean by pupils having facilities for practising is, their being entrusted with the performance of minor operations, administration of medicines, and the general treatment of sick animals. It is true that they might safely be allowed to do the same things in the case of a valuable animal, but neither the owners nor the authorities care to incur even a remote risk of injury from unskilful manipulation, and any ill consequences which might follow

the administration of a draught or a ball by a student, would most certainly be attributed to want of skill on his part. It is not that a valuable horse runs any greater risk than a common one, but that the onus is so much greater in the one case than the other. The student at the worst will only be required to do, during the latter part of his pupilage, precisely what will fall to his share as soon as he obtains his diploma and commences practice either as principal or assistant; and during his period of study he will at least have the advantage of the direction and superintendence of his teacher, who will no longer be at his elbow when he is fairly started in the world. Under any circumstances, therefore, it is necessary for young and inexperienced veterinary surgeons to acquire skill in surgical manipulation, and confidence in treating the disorders of domestic animals. These they can best gain, with the greatest benefit to their patients, while they are acting under competent direction; hence we advocate the admission of gratis patients into veterinary colleges. The Edinburgh school has taken the initiative in the matter, as we observe from an article in the 'North British Agriculturist,' although the principle was long ago accepted at the Royal Veterinary College, and will ere long, we trust, be carried into practice.

So urgent is the need for a good supply of patients of all kinds in the infirmaries of our teaching colleges, that failing to obtain these, even by the offer of gratuitous treatment, the authorities might well devote a yearly sum for the purchase of interesting cases of disease in any of the domestic animals. The establishment of a practical examination by the council almost necessitates an extension of the present facilities for clinical instruction in order to enable candidates for the diploma to qualify themselves within the college walls both in reference to the art and science of the profession.

Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Laboratory Teaching; or, Progressive Exercises in Practical Chemistry. By Charles Loudon Bloxam, Professor of Practical Chemistry in King's College, London. London: John Churchill and Sons. 1869.

This work is intended as a laboratory companion for persons commencing the study of Practical Chemistry; it "does not presuppose any knowledge of chemistry on the part of the pupil, and does not enter into any theoretical speculations." The contents and arrangement of the book cannot be better described than in the words employed by the author in his preface. At page v he says, "It (the work) contains—

"(1) A series of simple tables for the analysis of unknown substances of all kinds (not excepting organic bodies) which are known to be single substances, and not mixtures.

"(2) A brief description of all the practically important single substances likely to be met with in ordinary analysis, by which the learner may satisfy himself that his results are correct, and may at the same time become acquainted with the leading properties of the most important chemicals, and with the foreign substances which they are liable to contain."

So far as we remember, the introduction of such descriptions into a work on Practical Chemistry is novel. It is certainly a very desirable one, and one which we regard with especial favour, as long experience has taught us that such a system is calculated beyond all others to enable the student to acquire a sound and lasting knowledge of the facts of chemistry. It will be found particularly acceptable at the present time, when an acquaintance with theory is regarded by many teachers with greater favour than a knowledge of the facts and phenomena. Moreover, when it is remembered that there are many substances which cannot be identified with certainty by analysis alone, but only by analysis combined with an intimate knowledge of the physical and other qualities of such substances, the value of this part of Professor Bloxam's work will be readily appreciated.

"(3) Simple directions and illustrations relating to chemical manipulation, not collected into a separate chapter, but given just where the learner requires them in the course of analysis.

"(4) A system of tables for the detection of unknown substances with the aid of the blowpipe.

"(5) Short instructions upon the purchase and preparation of the tests, intended for those who have not access to a laboratory."

On the whole the book is systematically arranged, clearly written, and, in many respects, well adapted as an introduction to the more comprehensive works on general and analytical chemistry. As an accompaniment to lectures and writings on general chemistry, however, its value will, we fear, be lessened, from its possessing two defects, the adoption of a nomenclature which is rapidly becoming obsolete, and, 2, an inconsistency in the implied theoretical views of the constitution of salts. In explanation of the latter defect we may give the following example. In the Preface, p. vii, the Author states that "a given salt *contains* potassium and nitric acid." Now, this statement does not accord with any doctrine of the constitution of salts, and it is, moreover, absolutely incorrect. For most assuredly the thing called nitric acid, whether it be HNO_3, N_2O_5, or NO_5, according to the old view, which we believe Professor Bloxam still adheres to, cannot be demonstrated to exist in nitre. Mr. Bloxam, in the above quotation, implies either that nitre contains hydrogen, which is untrue, or ignores the presence of, taking the view he adopts, the sixth atom of oxygen which analysis can prove to be in the compound. The principle involved in this by no means unimportant defect obtains throughout the book.

In the next edition of 'Laboratory Teaching' it would be well to introduce methods for detecting lithium, and a description of its carbonate, as this salt is extensively employed as a solvent for uric acid by the practitioner of human medicine.

Tables of Tests for the Metals and Acid-Radicals occurring in Solutions of the Salts most commonly met with in Medicine. Arranged by Richard V. Tuson, F.C.S., Professor of Chemistry and Materia Medica at the Royal Veterinary College, &c. London: J. E. Adlard. 1870.

Professor Tuson having found that his pupils, in consequence of being deprived of the advantage of laboratory practice, experienced great difficulty in learning and remembering the tests necessary for the identification of the common

medicinal salts and alkaloids, has compiled a series of tables, wherein the characteristic reactions of such bodies are given in the simplest and briefest language.

We believe that these tables will not merely render good service to the student, but likewise to the practitioner, by whom they will be doubtless consulted.

How Crops Grow: a Treatise on the Chemical Composition, Structure, and Life of the Plant, for Agricultural Students. By Samuel W. Johnson, M.A., Professor of Agricultural Chemistry in the Sheffield Scientific School of Yale College. Adapted for English use by A. H. Church, M.A., Professor of Chemistry at the Royal Agricultural College, Cirencester, and W. T. T. Dyer, B.A., Professor of Natural History at the Royal Agricultural College, Cirencester. London: Macmillan and Co. 1869.

When we consider how greatly the health and prosperity of a nation depend upon the successful cultivation of the art of agriculture, it seems marvellous that, until within comparatively few years, little or no attention should have been paid to the principles by which it is governed. This condition of things was, at one time, doubtless due to agriculturists being ignorant of the proper means of research; and the reason why rational agriculture has not made even greater advances in modern times than it has is, we believe, the same as that which has greatly contributed to retard the progress of veterinary medicine and the social elevation of its followers. We refer to the persistent discouragement, except by a few, of a knowledge of the various branches of natural and experimental science.

The work now before us will enable any unprejudiced reader to see the great extent to which botanical, physiological, and chemical science has contributed to acquaint us with the laws of plant-life, as well as to comprehend the rationale and improvement of many of the methods used in practical agriculture. "For those who have not enjoyed the advantage of scientific training, the author has sought to unfold his subjects by such regular and simple steps that any one may easily master them." By way of comment upon this statement, we can only say that we consider that Professor Johnson has been eminently successful in the accomplishment of his task. The clearness of style and arrangement, as well as the numerous and well-executed woodcuts

with which the work is interspersed, should render it attractive, not only to the farmer, but also to every one taking an interest in such an important pursuit as agriculture. The thanks of the English agriculturist are due to Professors Church and Dyer for furnishing him with a work so well adapted to his requirements.

Extracts from British and Foreign Journals.

HOW TO COOK AUSTRALIAN MEAT.

For some years it has been evident to those interested in the subject of the supply of food to the people, that the high price of meat in this country, and the probability of that high price not only being maintained, but increased, renders some action necessary to supplement the home supply, by importation of meat either raw, cooked, or preserved. *Whence* this supply might be obtained was a question easily settled. The plains of Australia and South America are covered with countless flocks and herds sufficient to feed half Europe. *How* it could be made available was a far more difficult question to answer; and one which, at the present time, notwithstanding many experiments, cannot be said to be satisfactorily answered, though a great advance in the direction of a settlement has been made. It is not within the province of this article to discuss the various efforts to render available for use in England the animal food that is rotting for lack of consumers on the Australian plains. It is, however, necessary to refer to them in order to lead up to the subject to which it is more particularly desired to draw attention, viz. the aid that judicious cooking in this country may give towards making the supply of Australian and other preserved foods available for every-day use.

The first step that had to be solved was the possibility of importing into this country meat, uncooked and in carcase, that should be able to compete with the meat on our butchers' stalls. This must be the aim of every one working in the matter; and anything short of this will do but little towards affecting the present state of the meat market in England. The Society of Arts, through its Food Committee, has worked energetically on this point, and, by its suggestions and its encouragement, has afforded practical men an opportunity,

not only of experimenting, but of testing and comparing results; and these results, whether successful or unsuccessful, it has wisely treated as stepping-stones towards something better. In whatever form the meat comes from Australia and other places, it is at all events perfectly new, and unlike what we are accustomed to cook or eat. This will probably be the case for a considerable time; and, therefore, the question of treating it so as to make it most useful may very fairly claim our attention. Take for instance the tins of preserved beef or mutton, either roast or boiled, which contain good, wholesome, fresh meat free from bone, though generally with a superabundance of fat, or, to use a homely word, "dripping." Now, this meat when turned out of the tin presents an appearance totally unlike anything of the kind in England. Though it is said to be ready cooked, and fit for immediate eating, it is a matter of doubt whether it is very appetising to anyone seeing it for the first time.

Suppose that a working man, tempted by the idea of getting six pounds of cooked meat without bone at a cost of about sevenpence a pound, or about threehalfpence less than what meat bought in a butcher's shop would cost him, buys a tin for his Sunday dinner, what would be his feelings on his wife's setting before him the contents of the tin as she would turn it out? The first impression would be that he had been taken in, and his immediate resolve would be to buy home-fed meat for the future, even at a greater cost. Supposing, moreover, that scraping away the outside fat and glutinous matter, he musters up courage to attack the solid meat, he finds it, if his experience is the same as ours, pleasant and juicy to the taste, though stringy and fibrous, and having generally the characteristics of being overdone. His natural British prejudices will have been strengthened; he looks upon those who advised him to invest his money in Australian meat as little better than swindlers; and is not slow to proclaim the fact that he has been "humbugged." His complaint would be by no means unjustifiable, for the meat out of the tins is undoubtedly stringy, greasy, and flat, if such a word can be applied.

Two very important questions here present themselves,—first, can any improvement be made in the manner of preserving on the *other* side of the water? and, secondly, can anything be done *here*, within the compass and capabilities of a working-man's wife, to prepare the meat when taken out of the tin so as to make it palatable, and approaching what we are accustomed to see upon our tables? I have drawn my own conclusions as to the first point, but will leave them to

be dealt with hereafter. With regard to the second question, I took six pounds of undeniably good meat, to see what I could do towards making it fit for the table. My own cook, and the cooks of several of my friends, had tried, or pretended to try, some "speriments" as they called them; but their invariable success was—failure; and the messes they sent up as the result of their manipulations were something too dreadful to contemplate, much less to taste. Forgetting that the meat was already cooked, it was put on to stew till it shred into fibres that looked like strings of brown vermicelli. It was, therefore, clear that nothing was to be made out of that process. Determined, however, to persevere in the matter, and believing that the absence of both ignorance and prejudice would materially increase the chances of success, I resolved to take the matter in hand myself.

The conclusion arrived at was, that as boiling was of little use, roasting should be tried. Opening a tin of preserved beef, which stated on the outside that it was "Tindal's," already cooked, and imported from Australia into England by Messrs. McCall, I turned the whole contents into a large dish. Carefully scraping off with a wooden spoon all the fat and gravy from the block of beef, which seemed, as far as as I could make out, to be the under-cut of a large sirloin, I I tied it tightly round with a string, putting a piece of the solid fat in the centre, much in the same manner as rolled beef is tied, the only difference being that I tied it very tight. I then hung it as if it were a fresh joint to be roasted, before a bright and clear fire, giving it a slight sprinkle of flour all over after it was hung. Separating as well as I could the congealed gravy from the mass of grease that had surrounded the meat, I placed it in the dripping-pan, and, at intervals of a few minutes, basted with it the turning joint. In less than twenty minutes, the savoury smell that filled the kitchen convinced me that, so far, my experiment was succeeding. In half an hour, the meat having become well browned by the brisk heat, I took it down. Pouring off the dripping out of the pan, I made a rich, brown gravy in the ordinary way, by the addition of a little flour and water to what remained; and having served up the joint, with proper vegetables, I sat down to a *bonâ fide* dinner. Expectantly I watched the first slice cut off; the knife passed through the meat cleanly and easily; the second, third, and fourth slices came off equally well, and, to my great delight, I found that one fault had been cured—the meat was no longer stringy, but firm and compact. Tasting what I had on my plate, I found it all I could desire. I do not pretend to say that it was equal

in flavour to the finest Scotch beef, and I think I know the reason why, as I shall show another time; but it was tasteful, agreeable, and even rich, almost melting in the mouth; and in all respects equal, if not superior, to second rate English beef. Gratified beyond measure at the success of my effort, I proceeded to deal with the grease that I had scraped off the meat. Placing it in the hot dripping-pan, I let it gradually melt, and then I poured it into a large yellow basin, holding about a pint (which it quite filled), and let it cool. The next day, finding that there was about a cupful of gravy underneath, I had some Suffolk dumplings made to eat with it, and precede the cold joint, and I found it rich enough to bear a teaspoonful of hot water. The meat was even better cold than hot, and cut cleanly; it seemed more consolidated, and to have improved in flavour. Congratulating myself upon the result I had achieved, my eye fell on the basin of rich, yellow fat I had strained off. I know that "dripping" is regarded as a luxury by the family of a working man, for butter is not an article of which his children get much. Spreading some, therefore, on a slice of toast, I pushed my experiment to the extreme, with a happy result. The fat tasted marrowy and sweet, and was perfectly wholesome, and free from any trace of rancid oil.

Thus ended my first experiment. I have made others since then, but they must be reserved for a future telling. By way of conclusion, let me say that nine meals were made of the meat, which, with firing, flour, puddings, vegetables, cost 4*s*. 10*d*.; from which deduct the value of a pound of best dripping, value 6*d*. This gives the cost of each meal as—sixpence.—A. J. Larkins, in *Food Journal*.

SALES OF AUSTRALIAN BEEF AND MUTTON.

On March 1st, the first of a series of sales of Australian meat, which are to take place on the first Tuesday in each month, took place at the Hop and Malt Exchange in Southwark Street, under the management of Mr. Tallerman, the agent of the Australian Meat Company, who also acted as auctioneer. The quantity of meat submitted was 100 tons, consisting chiefly of mutton, cured in carcase, hind-quarters, hams, and rolls, packed in pure fat, which realized 3½*d*. to 6*d*. per pound; barrels of sheep's tongues, packed in pure fat, realised 8*d*. per pound; 1000 smoked sheep's tongues realised 1*s*. to 1*s*. 1*d*. per dozen; and 300 smoked ox tongues averaged from 1*s*. 1*d*. to 1*s*. 2*d*. each; 60 cases of mutton, in tins

of 7 lb. each, fetched 6½*d.* per pound. The attendance of buyers was, on the whole, pretty numerous, and the auctioneer expressed himself perfectly satisfied with the experiment.

MEAT PRESERVING.

Meat preserving, says the *Melbourne Age*, is being conducted with vigour, and the total amount sent away every month is large. One or two companies are getting into operation, but at present it pays well to buy sheep for their tallow; the boiling down establishments are still kept going, and more sheep are thus disposed of than preserved. In fact, when meat is the principal object, the legs are almost the only part preserved just now, the remainder of the carcase being boiled down. And as long as tallow pays so well there will be little trouble taken to perfect any other mode of curing except those already in use. We hear nothing now of the freezing or chilled-air process, about which so many were enthusiastic a short time since. The settlers seem quite careless about it, and as long as they are content to sell fat sheep and cattle at present prices, other people are not likely to be impelled to further action. The public get their meat cheap enough, and would lose rather than gain by a change, and the parties to whom exporting is a business have a fair margin of profit with little risk so long as they can buy at boiling-down prices. Thus the saving of the whole carcass as meat would only benefit the stockowners directly, and the bulk of their body seem to care more about a new land-law than about securing a better price for their surplus sheep. The further advance in the value of the wool will be material help to many, and perhaps, now that the land question is disposed of for another ten years, they may pluck up spirit enough to aid in improving the source of their income.—*Journal of the Society of Arts.*

ROYAL AGRICULTURAL SOCIETY.

Monthly Council, March 2nd.

The Annual Grant to the Royal Veterinary College.

Major-General Viscount Bridport (Chairman) reported that, in the opinion of the committee, the portion of the grant to the Royal Veterinary College (£50) which, by the resolutions of 1862, was to be appropriated for researches

into the diseases of cattle, sheep, and pigs, has not hitherto been sufficiently set apart for that purpose. They therefore recommend that for the future the annual veterinary grant of £200 be divided under two heads: (1) That £150 shall be paid to the Royal Veterinary College for the general advancement of veterinary science in reference to cattle, sheep, and pigs, as heretofore; and (2) That £50 be retained under the control of the Council for the purpose of being applied to experiments on the diseases of cattle, sheep, and pigs. They further recommend, that in consideration of the general grant from the Society the Governors of the Royal Veterinary College shall undertake that the Professor of Cattle Pathology shall carry out such experiments at the College as the Council shall require, the cost not to exceed the above-named amount; that the result be communicated to the Council immediately on the conclusion of the experiments; and that a detailed account of the expenditure of the £50 shall be furnished each year with the annual report. This report was adopted.

THE NATURE AND ORIGIN OF BLOOD-GLOBULES.

MM. A. Bechamp and A. Estor have recently brought before the French Academy a paper on this subject, which will be found in *Comptes Rendus*, 7th Feb. 1870. They remark that the blood-globules of man and the mammalia are usually regarded as small elastic masses, in which there is neither nucleus nor membrane. Deceived, they say, by their appearance under the microscope, these globules are taken for simple homogeneous masses, and they offer what they consider a demonstration that they are really masses of molecular granulations, agglutinated microferments (*microzymas*). They state that when blood is received directly from the vessel which supplies it, in a glass containing alcohol (45°), it remains quite limpid, neither depositing fibrine nor globules. Soon, however, the transparency of the field is diminished, and an abundant deposit is found at the bottom of the vessel, which the microscope shows to be composed almost exclusively of molecular granulations, free and mobile, and agglutinated. We can, they say, cultivate these granulations and promote their rapid proliferation. To do this the first mixture is thrown on a filter, the precipitate is retained, but some micro-ferments always pass, which are so prolific that at a temperature of 25° to 35° (C.) after a couple of hours another deposit takes place, and after

thirty-six hours it is as abundant as the first. The same series of phenomena are repeated till the liquid has completely lost its colour, and materials of nutrition are no longer supplied. The experiment may be made with blood that has been beaten up and defibrinized; so it is not the fibrine which furnishes the micro-ferments: they come from the globules, in which they may be found by simple methods.

The globules may be retained on the filter after a preliminary action upon them of solution of sulphate of soda. They are then placed on a glass slab, and ground with a glass muller. By these means the globules are torn, and the micro-ferments, set free, swim in the liquid, with their proper oscillatory motion.

This experiment may be varied by taking a drop of defibrinized blood, and placing it under the microscope, when a mass of globules will be seen, in which it is often difficult or impossible to find a single micro-ferment. Let a drop of distilled water be placed so as to pass under the glass cover of the object, and as it penetrates, the globules grow pale, and then become granular, soon breaking up and leaving in their place masses of very mobile micro-ferments, without a trace of pre-existing membrane.

The micro-ferments of blood behave like those of the liver in this method of evolution, and like those of fibrine. For at first they can, under certain circumstances, attach themselves together in chaplets more or less long. Placed in vials containing diluted starch creosoted, with or without addition of pure carbonate of lime, they rapidly develop into bacteria and bacterides.

These micro-ferments of blood-globules behave like ferments first under the form of microzymas, then in chaplets, and bacteria during, or after, this evolution. The starch of flour is rapidly liquefied by them; the mixture soon presents the characters of soluble starch and dextrine. If pure carbonate of lime is added previously to the starch liquid, and it is filtered, after a prolonged reaction the mixture lets fall a precipitate occasioned by the oxalic acid formed under the action of the ferments, which sometimes remain in the mycrozymic condition all the while, showing that this evolution into chaplets and bacteria is not necessary to their action upon the starch. The starch mixture is always rendered fluid before the appearance of the bacteria.

The writers affirm that the micro-ferments still contained in the cells are in a condition for reproduction. They say they have often seen the birth of a great number of small cells, pale, slightly segmented (*framboisées*), and much re-

sembling leucocytes, but usually smaller and more transparent. They have sometimes found twelve to fifteen, in the field of Nachet's No. 7 at one time, in liquid which some days before did not show a single one; and these cellules have never exhibited the characters of organs in proliferation, such as scission or budding. On the contrary, they have often seen very pale cells scarcely indicated by the micro-ferments agglomerated in spheres and motionless, and others more sharply defined, and further on true leucocytes.

From the preceding facts the writers conclude that the blood-globubles are aggregates of micro-ferments (*mycrozymas*); that these microzymas can develop in chaplets of beads, into bacteria, or bacterides, &c.; that they behave like ferments; that the microzymas of blood-globules give birth to cells like leucocytes, and to other smaller cells, more resembling the globules. These microzymas are thus capable, in various media, of engendering cells, and so lead us to believe that the globule of blood, as an organism, is the result of the work of these mere micro-ferments.

Amongst other things which they conclude—somewhat hastily—is, that respiration belongs to the class of phenomena termed fermentation.—*Monthly Microscopical Journal.*

RICKETS IN THE LOWER ANIMALS.

Rickets is not a favourite disease with English veterinarians, if we may judge from the scantiness of literature on the subject; and yet it is a malady of considerable importance to stockowners, for we find numerous brief references to its prevalence under certain conditions amongst young domesticated animals of almost[1] every kind. Perhaps it is because the comparatively incurable deformity strikes the attention more than the preventible disease, and because acute diseases claim, on the whole, more attention from the veterinary surgeon than those of long duration, that we have not any exhaustive account of rickets in the lower animals. A prize essay on rickets would be a great acquisition, we should think, to the journal of the Royal Agricultural Society.

The deformity is the feature of rickets to which chief

[1] Dr. Dick, in vol. xviii of the Pathological Society's 'Transactions,' affirms that rickets occurs only in animals which live chiefly on animal food. We cannot altogether agree with this statement, for there are numerous references to rachitic calves, lambs, pigs, and poultry, in various works on diseases of animals.

attention is drawn in most veterinary books; but we also find it recorded that young rickety animals suffer from irregularities of digestion, swelling of the abdomen, and weakness. The changes undergone by the bones of rickety animals are, increase of volume—especially of the ends of the bones—imperfect calcification, and consequent distortion.

It affects exclusively[1] young animals, and, perhaps, especially those which are unable to obtain a good supply of milk. Although inutritious food is considered to be an important element in the causation of rickets by some authors, several other conditions—*e. g.* cold, wet, and bad ventilation —are mentioned at the same time. Some consider this disease to be hereditary, and to be specially feared by those who breed *in and in*; and, in connection with this opinion, we may note the belief that certain dwarfed or deformed breeds of animals are the descendants of rickety ancestors.

In the *Horse*, rickets is rare, if indeed it occur at all. Hurtrel D'Arboval (*Dict. Vétérinaire*, Art. "Rachitisme") says that it is less common in this animal than in any other species; but he afterwards mentions that he has seen colts die of the results of rachitis in their first or second years, the symptom being inability to stand, extreme emaciation, dry skin, and diarrhœa. This account does not fit with that of rickets in other animals, for no mention is made of any deformity. Professor Dick says that "in foals there is sometimes an appearance of it, but they soon get well" (*Manual of Veterinary Science*, 1862, p. 41).

We may just mention in connection with this animal, that the disease known in America as "Big-head," and very fully described by Professor Varnell and Dr. George Harley in the several numbers of the *Veterinarian* for 1860, and in the *Transactions of the Pathological Society*, does not seem to be rickets. Gamgee calls it osteoporosis (*Domestic Animals in Health and Disease*, vol. i, p. 20).

Ox.—Rickets is mentioned incidentally by Finlay Dun as occurring in calves, in connection with an inherited "scrofulous diathesis." He says that such calves "are troubled with indigestion and acidity of the stomach; their appetites are capricious, their skins scurfy, their legs rickety, and their

[1] We do not find any records of rachitis in Dr. Crisp's account of *post-mortem* examinations of animals which died in the Zoological Gardens; probably but few of these animals were born in confinement, or subjected to artificial treatment until past the rickety period of life. We mentioned a fortnight ago in our Museum Notes, a specimen of a rachitic monkey, which is in the Museum of Trinity College, Dublin.

joints swelled; and death generally results from imperfect alimentation and the results of irritative fever" ("Hereditary Diseases of Cattle," *Journal of Royal Agricultural Society*, vol. xv). Mason Good (*Study of Medicine*, vol. v, p. 327, Art. "Parostia Flexilis") says that it has been seen in the ox; and Hurtrel D'Arboval mentions its occurrence in "the large ruminants."

Turning next to the *Sheep*, we again find rickets associated with a scrofulous tendency by Finlay Dun, in young sheep ("Hereditary Diseases of Sheep and Pigs;" *Journal of Royal Agricultural Society*, vol. xvi; "Lameness in Sheep and Lambs;" *ibid.*). Such lambs are said to be liable to "intractable swellings of the joints" and to "rickets, a disease of the bones occurring in early youth from perverted nutrition, and consisting in a softening of the osseous tissue." The same author describes the bending and distortion occasionally met with in rickety lambs.

Pig.—Several authors assert that young pigs are very liable to rickets. Finlay Dun classes it with tabes mesenterica and pulmonary consumption in these animals. Dick (*Manual of Veterinary Science*) says that it is frequently met with in young pigs; and his brief account shows that the disease described agrees essentially with rachitis. We also find rickets in pigs referred to, again in connection with scrofulous enlargements and abscesses, &c., in the *Journal des Vétérinaires*, Toulouse, 1850, (translated in the *Veterinarian* for 1853), where it is stated that young pigs sometimes become affected with swellings of the joints and bones—especially those of the carpus and tarsus.

Dog.—The dog is said by all authors to be specially liable to rickets. Heusinger says that "dogs especially are often born rachitic, or become so shortly after birth" (*Récherches de Pathologie Comparée*, p. 133); Dr. Cumin, in the *Cyclopædia of Practical Medicine*, refers to its presence in young pointers and greyhounds; and Hurtrel D'Arboval mentions its occurrence in carnivora, including dogs. Blaine asserts that many puppies of fancy breeds and in large towns become rickety soon after birth; such puppies grow slowly, except their "heads, belly, and joints, all of which enlarge at the expense of the rest of the parts;" and further on he says that all the joints of the extremities swell into protuberances (*Canine Pathology*, Art. "Rhachia," p. 177). In his opinion, it is commonly in "pugs and the smaller sort of bull-dogs." "Stonehenge" (*British Rural Sports*, p. 743) gives substantially the same account of rickets in young dogs, referring to its frequency in large towns, although "it is sometimes

seen even in rural districts," to the enlargements of the joints and the distortion of the limbs; and probably the same disease is included by Hertwig under the head of Fractures, when he says "the bones of some dogs are specially liable to fractures, because for want of proper pabulum they have become brittle; this is the case in very old dogs, but also in some young ones which have been fed chiefly on sour bread" (*Les Maladies des Chiens et leur Traitement;* translated into French by Ad. Scheler, p. 346). Dr. Dick has recorded cases of rickets in young greyhounds, and has described the condition of the bones in a way that leaves no doubt as to the identity of the disease in children and puppies. Professor Dick (*loc. cit.*) says that rickets is common in puppies. The writer once had a puppy which was probably affected with rickets, though the nature of the disease was not recognised at the time; the animal was brought up by hand, and was not well taken care of, one result of which was that one of its thigh bones was fractured; the fracture united rapidly, but the puppy continued to grow thinner and weaker, and shortly before death it could hardly walk. At the time, it was thought that the enlargement of the joints was only apparent and due to the general emaciation; but this was probably incorrect.

Birds.—Young poultry of various kinds are liable to become rickety. Dr. Cumin says that whole broods of young ducks and geese suffer from swelling of the joints (this, however, might refer to rheumatism or to synovitis). Dr. Horner, in some remarks on "spinal disease," states that "rickets or distortion of the spine" occurs in certain delicate breeds of fowls; that it comes on at the age of two or three months, and is first shown by "leg weakness;" he says that the spine becames laterally distorted, and that the distortion generally gets worse with age (*Moubray's Poultry*, by J. A. Meall and Dr. Horner, 1854, p. 494). "Leg weakness" is, however, assigned by Tegetmeier (*The Poultry-Book*, p. 332) entirely to rapid growth and increase in weight without proportionate development of muscular power; an account which seems to throw some doubt on the truly *rickety* nature of the disease described by Horner. A fuller account of deformities of the osseous system in poultry is to be found in the *Gardener's Chronicle* (1850, p. 618), where nothing is said about weakness of the legs; but mention is made of the frequency, in turkeys and fowls, of a peculiar distortion of the keel of the sternum, and of angular (*not lateral*) curvature of the spine. Water-birds and gallinaceous game birds are said not to be subject to the disease. In the same Journal (1862,

p. 1038), in an article on turkeys, we find it stated that, if they are neglected when young, they become debilitated, their heads grow too large for their bodies, and their joints enlarge.

Causes of Rickets in Animals.—We find that many authorities consider rickets, or at least a tendency to rickets, in a high degree hereditary. This is the opinion especially of those who place rickets in the same category as the scrofulous and tubercular affections, and these authors lay great stress on the influence of breeding in-and-in upon the production of tubercular disease and rickets. We have already alluded to the opinion that certain breeds of mal-formed animals are considered by some high authorities to have been produced by the transmission of rickety deformities. Livingston (quoted by Youatt) says of the so-called *Otter* breed of sheep, that their legs are short, "and turned out in such a manner as to appear rickety. . . . . They appear as if their legs had been broken, and set by some awkward surgeon" (*Sheep, their Breeds, Management, and Diseases*, p. 135). Several writers believe that some breeds of terrier dogs have descended from rickety ancestors. Thus Youatt, Blaine, and Moncourrier (*Essai sur le Rachitis ou L'Osteomalaxie*, 1803) refers to a small breed of wry-legged terriers which is believed to have originated in some rickety specimens in which the head, belly, and joints enlarged more than the other parts, and in which the deformity of the legs "remaining after the disease, has transmitted itself from generation to generation." Blaine (*Canine Pathology*, 1851, p. 17), however, complicates the question by saying that many varieties of dogs are the "effect of monstrosity, or have arisen from some anomaly in the reproductive or breeding process," an opinion which seems to show a want of discrimination between *deformity* and an inherited *tendency*. Improper food, wet, cold, and bad ventilation are, however, all mentioned as important factors in the causation of rickets by many veterinarians. One author especially mentions that chickens hatched *late in the season* are more liable to deformities of the bones than those which are the produce of earlier broods. Good food, especially such as is rich in oily matter, is recommended for rickety animals.—*British Medical Journal.*

[In our next number we hope to make some remarks on the disease known as rickets in lambs. These cases are of frequent occurrence, and investigation has shown that they do not depend on disease of the osseous structure.—EDS.]

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

ANIMAL VACCINE.

Recueil de Médecin Vétérinaire.

One great advantage in favour of animal vaccine is, that it can be obtained almost *ad libitum*, without the risk of having a short supply in case of emergency, when, on a sudden outbreak of an epidemic of smallpox, general vaccination has to be resorted to.

At the beginning of February, 1869, the Steamer "Floride," of the Transatlantic Steam Packet Company, doing the service between Panama and Saint Nazaire, returned to France with several patients attacked with smallpox.

The malady had been introduced on board by a passenger who embarked at Columbia. This passenger came from the coast of the Pacific, where the malady prevailed from Valparaiso to Panama, an extent of 1800 leagues. It was not till twelve days after his embarkation that he felt the first symptoms of the malady. Notwithstanding the most complete isolation of the patient, the smallpox spread to the crew and officers of the ship, only the captain and the doctor escaping; eight deaths occurred from it.

The arrival of the "Floride" in France preceded only a few days the time of the departure of another steamer, the "Nouveau-Monde," for the Isthmus of Panama. At the thought of the danger which the crew, &c., of this steamer would run at its arrival at Columbia, the Company decided on having the whole of them revaccinated; but this was a question of revaccinating from 400 to 500 persons, and there not being vaccine enough on hand for the purpose, they were on the point of giving it up, when it occurred to them to apply to M. Lanoix, and to ask him for 200 tubes of vaccine.

M. Lanoix considered that it would be more expedient to inoculate a heifer to be put on board in order to revaccinate the crew. On the 5th of February, a heifer was consequently inoculated with 150 punctures, and was put on board the "Nouveau-Monde," which left on the 8th for St. Nazaire.

The next day (9th) a lady's maid, who had been at work in the room where the dirty linen of the "Floride" had been counted, was attacked with smallpox.

This circumstance accelerated the revaccination of the crew of the "Nouveau-Monde," and on the 10th, 11th, 12th, and 13th of February, the whole of the passengers of the packet were revaccinated. One half of the revaccination was followed with the characteristic pustules, the evolution of which did not cause any claim for exemption of duty amongst the crew.

On the 25th of February two sailors were embarked at the Port de France, and on the 26th they were attacked with varioloid; but notwithstanding that there were now on board three persons with smallpox, none of the crew or passengers were attacked with it. The revaccination had, to all intent, its full effect; all those who had been submitted to it, whether it produced pustules or not, were preserved. It was evident that in those cases where no pustules were produced, the individual was under the influence of a previous vaccination, which was still efficacious, and there is no doubt that of the 250 on whom the vaccination had been followed by the pustules many would have been contaminated.

The Transatlantic Steam Navigation Company, struck with these results, embarked vaccinated heifers on two others of its steamers employed on the service of the Isthmus. The heifer on board the "Nouveau-Monde" had 150 well-developed pustules, enough to vaccinate 2000 persons, and there were only 500 on board. This enabled the doctor of the vessel to fill a great number of tubes, which had been supplied by M. Lanoix for the purpose, to be distributed at Port de France and Panama, in order to calm the alarm of the population, who found themselves without protection against this fearful calamity.

This is a great triumph in favour of animal vaccination, and the young medical man who persevered throughout the greatest difficulty at the risk of his reputation and at great sacrifice, has thus multiplied the precious means of preservation against this fearful malady. With the name of Lanoix must ever be coupled the honour of having rendered a signal service to his fellow-men, and these services of our colleague, we trust, will not remain without the reward due to them.

The experiment on board the "Nouveau-Monde" is most conclusive; 250 persons presented characteristic pustules, and were protected, though in a close confined space, in which were three individuals affected with smallpox, and 250 on whom no pustules appeared, and who, notwithstanding,

did not take the infection, because they were still under the influence of a previous vaccination, which still gave them immunity. Can there be a greater proof in favour of the efficacy of vaccination?

The efficacy of the animal vaccine is no longer doubtful; its purity in respect to syphilis is self-evident; and its abundance is such as to suffice for all eventualities and wants, and it is also free from all morbific matter likely to cause local disease, which has been fully established by experience. In fact, there can be nothing against it, unless it is dictated by envy and prejudice.

MARCHAL (DE CALVI).

We have given this article *in extenso*, on account of its interest in reference to the absurd opposition to vaccination in this country of late.

The following Circular has been addressed to the Governors of the Provinces by the Minister of the Interior of Belgium.

YOUR EXCELLENCY,—No rule has been laid down for the guidance of the local authorities in reference to the period which should elapse before the reintroduction of cattle into the sheds where contagious pleuro-pneumonia has been ascertained to exist, or the free circulation of animals or of the bovine species who have been in contact with animals affected with that malady.

The number of cases of relapse which have occurred in certain localities, the virulent form which this contagious malady tends to assume, demands the most severe measures to be taken to prevent considerable losses being sustained by agriculturists.

Experience seems to prove that the period of incubation of pleuro-pneumonia epizootica varies very considerably, and that the term of incubation being rather long, it therefore would not be prudent to permit the free circulation of animals which, by their cohabitation with diseased cows, might be considered infected with the malady.

It is therefore important that the local authority should order the sequestration of animals during at least forty-five days after the last case of the malady has occurred.

In reference to the introduction of fresh cattle into the

stables or sheds where diseased animals have been located, there would be no inconvenience when they have been thoroughly disinfected in allowing the reoccupation after a delay of twenty-five days; it would be useless to add that animals which have been in contact with diseased animals should not be readmitted except after the term of forty-five days.

Such are the measures which, after having taken the advice of the most competent persons, we pray your Excellency to recommend to the communal administrations of your province, in order to mitigate the ravages of pleuro-pneumonia; you will do well to give the same instructions to the Government veterinary surgeons.

The dispositions contained in articles 319 to 331 of the Penal Code authorise the burgomaster to take measures to prevent the infractions that might be committed.

The Minister of the Interior,

Ed. Pirouet.

SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

The annual general meeting of the above Association was held in Mrs. Cummings's Hotel, Lothian Road, Edinburgh, on Wednesday the 23rd ultimo, at 2 o'clock, p.m. There was a large attendance of members. Mr. Robertson, V.S., President of the Association, occupied the chair.

The following members were also present, viz., Professor Williams, of the Veterinary College, Edinburgh; Messrs. T. Pollock, Edinburgh; J. Aitken, Dalkeith; J. Borthwick, Kirkliston; C. Baird, Edinburgh; W. Cumming, Edinburgh; A. Robinson, Greenock; C. Cunningham, Slateford; — Connachie, Selkirk; — Laing, Falkirk; J. Aitken, Edinburgh; and J. Mitchell, Musselburgh, Hon. Secretary.

The following gentlemen, members of the profession, attended as visitors, viz., Messrs. Balfour, Kirkcaldy; Pender, Whitburn; Brown, West Calder; McLean, Royal Artillary, Leith Fort.

Letters of apology were read from Professor McCaul, Veterinary College, Glasgow, and Mr. Anderson, Cathedral Street, Glasgow.

The President then called upon the *Secretary* to read the minutes of previous meeting.

The minutes having been read,

The Chairman moved that the minutes be approved.

The motion having been put to the meeting, was unanimously adopted.

The Chairman then moved that the meeting now proceed to the

election of office-bearers for the current year. *Professor Williams* moved that the present office-bearers be re-elected, which was duly seconded and carried.

The Treasurer then submitted his financial statement for the past year, which showed the affairs of the Association to be in a prosperous and satisfactory condition. The report was adopted.

The annual subscriptions for the current year were paid, and two new members were nominated for election, viz., Messrs. Balfour (Kirkcaldy), and Brown (West Calder).

The Secretary read a letter in answer to a communication he had addressed to Mr. Broughton, Secretary of the Yorkshire Veterinary Medical Association, regarding the carrying out of Mr. Fearnly's resolution; when it was moved, seconded, and unanimously agreed, to nominate one of their number to represent their views in Council. In accordance therewith Mr. Robertson, President of the Association, was elected the representative of the Society.

The ordinary business of the Association being concluded, the *Chairman* called upon *Professor Williams*, of the Veterinary College, Edinburgh, to deliver the address of which he had given notice.

The Professor on rising said:—Mr. Chairman and gentlemen, I propose on the present occasion to address to you a few words on "Enteritis, or Inflammation of the Bowels." Some practitioners restrict the term to inflammation of the mucous and muscular coats of the intestines only, using the term peritonitis when the external or serous coat of the bowels is affected. For the purpose of discussion, however, I will confine my remarks more particularly to inflammation as affecting the mucous and muscular coats of the intestines; in short, to inflammation of the bowels strictly speaking as a primary disease.

After describing very minutely the pathology and *post-mortem* appearances of the disease, the Professor next went on to speak of the medical treatment which appeared to him to be the most beneficial. He would recommend, he said, large doses of a watery solution of opium, so as to assist nature in her efforts to combat the disease. He forcibly deprecated the giving of laxatives, and even objected to venesection, but would diligently employ enemas and also external applications, such as fomenting the abdomen with cloths dipped in hot water, the application of blisters, &c.

He then proceeded to relate a case of enteritis to which he had been lately called, and in which he applied the treatment he was then advocating. On returning the following day he found his patient doing well, the urgency of the symptoms having yielded to the means employed; however, at the pressing solicitation of the owner to give a laxative, he yielded, and the result was as had been anticipated, namely, that unfavorable symptoms supervened, and the animal gradually sunk and died.

From the Professor's well-known researches, combined with extensive practical experience, and the masterly manner with which

he deals with all forms of disease, his address was listened to throughout with much attention.

Discussion being invited,

Mr. McConnachie rose and said that he had pursued the treatment advanced by the Professor with the best results. He instanced a case to which he was called a few days ago, in which the owner was most anxious that he should give a laxative, but he refrained from doing this, and the result was that the horse was soon convalescent.

Mr. McLean remarked that his experience of enteritis as a primary disease was very limited, owing to the judicious stable arrangement which was so thoroughly carried out in the army. Occasionally the disease followed as a sequel of hernia, and this he had treated very successfully.

Mr. Cunningham said he was in favour of bloodletting in the first stage of enteritis; that his medical treatment consisted of giving tincture of opium and belladonna, together with the application of external agents, such as those already mentioned, but he could not say that his endeavours had been attended with much success.

Mr. Robinson said, that in a large town practice, veterinary surgeons were called upon almost daily to treat cases of spasmodic colic In such cases he gave the usual colic-draught (of a stimulating and sedative character), and if his patient did not obtain relief in an hour or so, he administered a dose of physic; of course he employed the external remedies which had been mentioned. He, however, experienced considerable difficulty sometimes in drawing the line of demarcation between the two diseases, as when the former passed into the latter; but he considered that large doses of the watery solution of opium, as advocated by the professor, good treatment for enteritis.

The Chairman remarked that, in most diseases affecting the chest, he was very successful, but in enteritis he had not met with much success. He gave tincture of opium and belladonna; he was not in favour of giving laxatives, even although there had no fæces even passed for two or three days. The external remedies mentioned he considered of the utmost importance in the treatment of the disease under discussion.

Most of the other members who took part in the discussion preferred giving tincture of opium combined with oil; others, however, were in favour of giving small doses of calomel, and opium, using, of course, the external treatment recommended.

Professor Williams having replied,

The Chairman proposed a vote of thanks to the Professor for his able, instructive, and interesting address, which was cordially responded to and acknowledged by the Professor.

There being no other business of importance before the meeting, *Mr. Baird* proposed a vote of thanks to Mr. Robinson for his conduct in the chair, which was cordially responded to and acknowledged by Mr. Robertson.

The members afterwards sat down to an excellent dinner, President Robertson occupying the chair, Mr. Aitken acting as croupier. After the cloth was removed, and the usual loyal and patriotic

toasts had been drunk, the *Chairman* in very flattering terms reviewed the business of the meeting, and stated the great pleasure it had afforded him to preside over their deliberations. He trusted that the present meeting among many others would only stimulate them to renewed energy in the cause they all had so much at heart, viz., the prosperity of veterinary science. He also dwelt particularly upon the great advantages to be derived from periodical gatherings such as the present, not only for the transaction of business in connection with the Association, but for the promotion of social intercourse among its members.

The members separated after having spent a most pleasant and agreeable evening. It was resolved to meet again in the same place in May next. Mr. Connachie, Selkirk, promised to introduce a paper, of which due intimation will be given.

James Mitchell,
Hon. Secretary.

THE LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

The twenty-third quarterly meeting of the Liverpool Veterinary Medical Association was held on Friday evening, February 11th, 1870, at the Medical Institute, Hope Street; Thomas Greaves, Esq., of Manchester, P.R.C.V.S., and President of the Association, in the chair.

The following gentlemen were present:

Messrs. Morgan, Wilson, Elam, Heyes, Procter, and Leather, Liverpool; Whittle, W. Challenor, Worsley; P. Taylor and Anderson, Manchester; A. Lawson and A. Challenor, Bolton; Woods, Wigan; Dobie, Birkenhead; Storrar, Chester; Lawson, Woolton; Fishwick, Burnley, and the Secretary.

Letters of apology were read from Messrs. E. C. Dray, Carless and Son, W. A. Cartwright, T. Taylor, T. D. Broad, and C. Dayus. Also telegrams from Messrs. M. E. Naylor and T. Roberts.

The minutes of the previous meeting having been confirmed, the President called upon the Secretary to read a resolution emanating from the Yorkshire Veterinary Medical Society relative to the representation of Provincial Veterinary Medical Societies and Associations in the Council of the Royal College, after which the President invited the opinions of the assembled members thereon. All agreed that the object was most desirable, but differences arose as to the best mode of attainment. The discussion was closed by Mr. Whittle proposing the adoption of the resolution, which being seconded, was carried "nem. con."

In pursuance with notice given at last meeting, *Mr. W. C. Lawson* proposed—

"That the expenses for tea, which had hitherto been paid by the President, should in future be defrayed from the funds of the Association."

Mr. Reynolds seconded the motion, which was carried.

The President, in proposing that a letter of condolence be forwarded from the Association to the widow and family of the late Mr. John Lawson, of Manchester, briefly but most feelingly alluded to the bereavement sustained by the whole profession by the death of such an honorable and distinguished member.

The proposition was seconded by *Mr. Morgan*. The sincere expressions of sympathy spoken by both were reverently participated in by every individual present.

Mr. Peter Taylor then read an exhaustive and scientific essay upon pyæmia, which provoked an interesting and profitable discussion amongst the members.

A vote of thanks to the essayist and President terminated the proceedings.

RICHARD S. REYNOLDS,
Hon. Sec.

Veterinary Jurisprudence.

TRANSIT OF CATTLE BY RAILWAY.

AT a late sitting of the Ipswich County Court, *John Mudd*, a cattle dealer, brought an action against the *Great Eastern Railway Company* to recover £29 8s. 11d. damage sustained through non-delivery of cattle.

Mr. Orford appeared for the plaintiff, and Mr. Corpe for the defendants. Plaintiff stated that on the 3rd of December he bought a number of beasts at Messrs. Read's sale yard, Beccles, and sent them to the station at Beccles in charge of a man named *Samuel Fairhead*. He divided the bullocks into two lots, eleven for Colchester, and eight for Mr. Upson, at Ipswich, the eight costing £177 15s. Plaintiff saw the clerks at Beccles goods station, and said he wanted a large truck to send eight beasts to Mr. Upson. One of the clerks said, "All right." He also said he wanted to send eleven beasts to Colchester, and that he wanted one small truck and a half. The station master said he had no small trucks. Plaintiff said, "Then my man must walk them." He went away, and on his return said he thought he could manage it. Plaintiff on again seeing Mr. Upson, told him that he had consigned eight beasts to him from Beccles.

On his way to Colchester the next morning, and from what he had heard, he asked Mr. Nibloe why he did not let the eight beasts go, and he said he should not let them go under the charge for a truck and a half. Plaintiff said he ordered a large truck. He went to Beccles again at the end of a fortnight, and called and saw the clerk, and said, "What a pity it is that we have this bother with our cattle. You know I ordered a large truck." He said it was Mr. Nibloe's fault. He saw the station master, who also said it was Mr. Nibloe's fault. He sold the beasts at Colchester, and they realised nearly £1 apiece profit. The eight beasts sent to Ipswich were a better class, and they cost more per head. Judging from the price he made at Colchester he thought if the eight beasts had been sold at Ipswich he should have realised £10.

Samuel Fairhead, drover, said he told the railway man that Mr. Mudd had ordered a large truck, and that the eight beasts could not be got into a small one. The man replied, "We must, somehow." Seven of the beasts were got in with great difficulty, and the other bullock had to be put in another truck.

Mr. M. Upson deposed that on the morning of the 3rd of December he sent his man to the station for some bullocks, but the man returned without them. About ten o'clock a clerk brought him a letter from Mr. Nibloe, and he sent back a message that he would pay for one truck and no more. He lost a customer (Mr. Gocher) through not having the beasts delivered.

Wm. Carrington Mason proved going to Mr. Nibloe, at twelve o'clock on the 4th, and telling him that the beasts were not Mr. Upson's, who was only commissioned to sell them. He (witness) said he would take them then if Mr. Nibloe would let them go at the charge for one truck. He replied that he had telegraphed to Beccles and had not received any reply.

Robert Smith said he slaughtered the eight animals in question, and the Company conveyed the meat to London. They were bad with the *foot and mouth disease*, and they, no doubt, caught it from lying in the cold.

Mr. Corpe then opened the defendant's case, remarking that what really took place at Beccles did not amount to a contract in any shape. As to what took place at Ipswich, Mr. Nibloe had had frequent dealings with Mr. Mudd, and Mr. Nibloe had often allowed beasts to go for that which the consignee was willing to pay, and it was very difficult to recover the balance, as Mr. Nibloe had found to his cost.

His Honour (J. Worlledge, Esq.) said he thought the beasts might have been taken away the following Tuesday, instead of allowing them to remain with the Company for several days after.

William Hammond, a clerk at Beccles station, said: I remember plaintiff coming to the office, and he said he wanted a small truck and a half for Colchester, and a large truck for Ipswich. I told him I did not think we had any small trucks. Mr. Mudd said, "I do not understand paying for a large one when I want a small one." He also said he would walk the beasts if he could not have what he

wanted. We then went to the station master, and I said, "Mudd refuses to pay more than a small truck rate." Mr. Wilkinson said, "You will do us a favour if you will, as we are more than full." They had some further talk, and Mr. Wilkinson said, "I can't promise you anything, but we will do the best we can." When Mudd asked me for a large truck, I did not say, "All right.

James Turrell, a cattle loader, stated, in reply to Mr. Orford, that he was ordered to put Mr. Mudd's eight beasts into a large truck, but that there was not a large truck then at the station.

The station master at Beccles and *William Davis* gave confirmatory testimony.

Mr. J. T. Nibloe, station master, Ipswich, said: I recollect plaintiff coming to me on the 4th December. He said, "How is it you will not let the beasts go?" I said, "There is a truck and a half charged, and that I must have before they go." He said, "They should have come at the one truck price, and I won't pay more." I said, "If you will pay that and take the beasts away, the question of overcharge will be settled afterwards." He replied, "You had better keep the beasts." I told him I would make inquiry and let Mr. Upson know as soon as I knew myself. I sent a clerk with a letter to Mr. Upson, saying that the beasts were at the station at his risk and expense. I afterwards sent up and offered to let the beasts go at the one truck price.

His Honour—Was that in consequence of information you got from Beccles? Mr. Nibloe—Yes.

Mr. Corpe—What was the information? Mr. Nibloe—"You had better deliver the bullocks up at the one truck price," or something to that effect.

Had you a reason for not letting the beasts go?—I have had several disputes with Mr. Mudd as to the freight of cattle. At one time he had credit for a day or so, but there were so many disputes that I determined to carry out my instructions to the letter, viz., to pay before delivery.

By Mr. Orford—There have been frequent disputes with plaintiff, and money has been returned to him.

His Honour, in giving judgment, said he considered that both sides had been in fault, and in the result both must suffer for it. After the evidence, he must find that there was an assent at Beccles that the plaintiff should have a large truck, and therefore the Company ought to have charged only one truck freight. The charge of a truck and half freight was wrong, and in consequence there had been a wrongful detention for a number of hours, and the sale to Mr. Gocher was lost. The animals no doubt continued to depreciate in value down to the time they were slaughtered, but it would be hard to visit the whole of that loss upon the Company, for the plaintiff might have taken the beasts on the following Thursday, whereas the defendants were bound to keep them until the following Monday. The only loss then was the difference between what Mr. Gocher might have given for them and what they might have fetched on the Ipswich Market on the Tuesday. Mr. Mudd had estimated

his loss through not being able to sell the beasts on the Saturday at £10. The judgment of the Court would be for the plaintiff for £10, and considering the importance of the case, he (his Honour) should order the costs of the plaintiff on the higher scale. He thought by this verdict both sides would suffer more or less through the obstinacy which had been displayed in the matter.

PLEURO-PNEUMONIA.

FAUX *v.* BROOKES.

THIS action, which was tried before Mr. Justice Byles and a special jury, at Bedford, on the 17th of March, possesses several features of novelty and interest to the members of the profession. The facts as set forth in the declaration are briefly these.

The defendant Brookes, after having been disengaged for some time, at Michaelmas, 1868, became the tenant of a farm at Coleorton, near Ashby-de-la-Zouch, in Leicestershire, adjoining that of the plaintiff; the respective buildings, homestead, &c., being separated only by a cart road common to the farms. Defendant at the time had no kind of stock whatever; and at the solicitation of an auctioneer, named Orchard, attended a sale of cattle and other effects, which Orchard was empowered to dispose of, by the executors of a Mrs. Cramp, on a farm at Etwall, in Derbyshire, twelve miles distant. This took place on the 11th November following. It was noticed at the sale that the cows were lean; but the extreme drought of the summer, 1868, was considered to be the cause. Prices therefore ranged low. About two months prior to the sale, pleuro-pneumonia was said to be present on Mrs. Cramp's farm, and from which certain cattle had died, but the remaining stock was considered to be perfectly sound; and after a private consultation between the auctioneer and executors, it was deemed inadvisable to apprise buyers of the previous existence of the malady. At this sale the defendant purchased five in-calf cows, and at another place one, the whole of which were taken by defendant's man to his new occupation at Coleorton. On the 24th January, 1869, signs of indisposition appeared in one of the cows of the Etwall number, for which a drench was prescribed by Mr. Perry, of Ibstock, a graduate of the Edinburgh Veterinary College. On the 27th, signs of labour came on, and assistance was sought from the only available source —the adjoining farm—to enable the defendant to effect delivery, and the herdsman of plaintiff responded to the call. Defendant placed the calf in position, attached cords, and with the united help of defendant's man, the cow was safely delivered. Plaintiff's man then washed his hands, received a mug of ale and departed, not more than five minutes being occupied in the operation. Mr. Perry saw the cow after, and on account of slightly accelerated breathing, at the

time alleged to be the result of assisted labour, prescribed another drink. Signs, however, became more intense, and the animal was then pronounced to be affected with "disease on the chest." The affection became more aggravated, and in spite of blisters and drinks, the animal died on the 10th of February.

Other cattle—principally young stock—had been purchased by defendant and mixed with the Etwall cows; and, after the death of the one just alluded to, several animals, young and old, were seized and died; while others, some of which were also the young ones, sickened for a time, but recovered. No *post-mortem* examination was made of the carcass of the first cow; one or two of those subsequently attacked were examined, but the major part were buried without medical investigation.

In the early part of the month of April, a cow on plaintiff's farm was seized, cast her calf, and after three weeks of amateur doctoring, was killed on the 25th of same month; and subsequently, up to September 25th of same year, nine cows in all died, the periods of seizure varying from one month to six or eight weeks. Plaintiff now became convinced that he had to deal with a contagious malady, although about five years previous to his losses he had, under a different idea, fearlessly prescribed all the forms in homœopathy without injury to his own stock, paid almost daily visits to diseased cattle on the adjoining farm, then in the occupation of a Mr. Bonnett, who suffered ruin from the loss of the whole of his herd of pedigree stock. Plaintiff concluded Brookes's cattle had brought "the complaint," the herdsman having assisted at the calving, had taken matter on his clothes which conveyed it directly to plaintiff's cows. He then brought the action, based on two counts, viz.: That defendant had knowingly allowed to exist on his farm a specific contagious disease among his cows, and suppressed all information thereon to the injury of plaintiff; and, second, that defendant had wilfully and fraudulently enticed plaintiff's herdsman in his (plaintiff's) absence from home to his injury, and caused said herdsman to assist in a certain operation on a cow which defendant then well knew was affected with a highly contagious disease, resulting in the conveyance of said disease to the stock on plaintiff's farm, death of nine cows and illness of eight others. Damages (which plaintiff considered were beyond estimate) were laid at £300.

Mr. Merryweather and Mr. Bulwer appeared for the plaintiff, instructed by Messrs. Bass and Jennings, Burton-on-Trent. Mr. O'Malley, Q.C., and Mr. Metcalfe, instructed by Messrs. E. and T. Fisher, Ashby-de-la-Zouch, attended on behalf of the defendant.

The preceding facts were brought out by examination of plaintiff and his witnesses; and Mr. Garrard, M.R.C.V.S., Ticknall, supported the view taken, that the disease had been brought from Mrs. Cramp's farm on the 11th November, and that the period of incubation of pleuro-pneumonia is at least three months and even upwards. Mr. Wm. Robinson, M.R.C.V.S., Tamworth, mainly corroborated the statements of previous witness, but thought if

plaintiff's herdsman washed his hands, any infectious matter thereon would be removed. He also thought the period of incubation of pleuro-pneumonia to be variable, and likewise a point that would never be definitely arrived at. This closed the evidence for plaintiff, when some conversation ensued between the judge and learned counsel, as to the withdrawal of the record with costs, the advisability of allowing the case to stand over for further consideration until next assizes, or sending it on the two counts to the jury to prove pre-existing knowledge. Mr. O'Malley objected to the first; the learned judge would not consent to the second, and ruled, if the jury received the case on the third proposition, they would not be allowed to decide against the defendant before Mr. O'Malley had addressed them on behalf of his client.

The case was then sent to the jury, and after consultation during five minutes, decided there was no evidence, and a verdict for defendant was at once returned, in which the learned judge said he heartily concurred.

Besides the ordinary witnesses retained for defendant, the following members of the profession had been subpœnaed, viz.: Messrs. H. Lepper, Aylesbury; G. Armatage, Leighton-Buzzard; W. A. Cherry, London; E. F. Wilkinson, Kennington Cross; H. King, Melbourne; E. Rogerson, Bedford; and E. Perry, Ibstock, whose services, however, as well as others on defendant's side, were not called into requisition in consequence of the decision of the jury.

PARLIAMENTARY INTELLIGENCE.

THE LONDON FOREIGN CATTLE MARKET.

Sir H. S. Ibbetson asked whether it was true that the contemplated site for the London foreign cattle market was likely to be insufficient in the event of the cattle from several foreign countries being declared infected.

Mr. W. E. Forster said he was glad that the putting of the question enabled him to correct a false impression which had got abroad. In the first place, it was not correct that any increased tolls were being levied at the present time. According to the Bill passed last year, increased tolls could be levied upon a market being erected by the Corporation of London to the satisfaction of the Privy Council. He had every reason to believe that they intended to make a market, and he had no reason to believe it would not be

a sufficient market. The market was referred by the Corporation to the Markets Committee, who had inspected eight sites. It was not the business of the Government to state which was the best site, but they might state that a particular site would not be satisfactory. After hearing what these gentlemen said, they came to the conclusion that there was no objection to the site chosen, which was at Deptford, provided the area was sufficiently large. The area had been stated to be only three to four acres, but he believed it was from twelve to fourteen, and it would enable two ships to be unloaded at the same time or at any period of the tide. Then there were ample means of railway and other communication. The site was not yet definitively determined upon, the Markets Committee not having reported as yet to the Corporation.

APPOINTMENT OF EXAMINERS.

Letter from Mr. Alexander Robinson.

Greenock; *March 7th*, 1870.

Gentlemen,

Referring to the report of the Council meeting of the Royal College of Veterinary Surgeons in your last number, in which my election as a member of the Scotch section of the board of examiners is announced,—permit me to thank Mr. Wilkinson and Mr. Fleming for the kind way in which they spoke of me. In accepting their eulogia, however, in the very friendly spirit in which they were bestowed—allow me to say that in occupying a seat at the Scotch board, I shall endeavour to fill it in the pure technical interests of the profession, and without the slightest prejudice to any opinions I may have expressed, or may still express upon Veterinary politics.

I am, Gentlemen,

Your obedient servant.

To the Editors of the 'Veterinarian.'

ABANDONMENT OF THE PROPOSED VETERINARY CONGRESS AT BRUSSELS.

We have just received a circular relating to the contemplated Congress at Brussels, of which the following is a translation :

"To the Members of the Veterinary Congress of Zurich.

"Sir and Honoured Colleague,

"The Veterinary International Congress held at Zurich decided, at its sitting of the 4th Sept., 1867, that it would hold its next meeting at Brussels in September, 1870, and did us the honour to confide to us the organization of its fourth assembly.

"In the discussion which followed relative to this object one of us, M. Thiernesse, stated that we had 'not received a special mission for this purpose;' and again, a second time, he thus expressed himself:—'It is no doubt well understood that, if the Congress makes choice of Brussels as the place for its fourth meeting, the Zurich committee will communicate with the Belgian Government.' . . . (pp. 55 and 56 of the 'Compte Rendu' of the Zurich Session).

"Such application not having been made, we have not obtained the concurrence we require to give to the congress that complete organization which appears to us to be necessary, and which prevailed at the former meetings.

"We deeply regret that this circumstance prevents our carrying out the mission confided to us and offering to you in our country the cordial hospitality which we should otherwise have been happy to have done.

"Accept, &c.,

(Signed) "A. Thiernesse.
F. Defays.
Wehenkel."

MISCELLANEA.

CULTIVATION OF CARROTS.

Experiments have been made which prove that a bushel of carrots and a bushel of oats fed together to a horse, are worth more than two bushels of oats; yet an acre of ground which will yield forty bushels of oats will produce a thousand bushels of carrots. Why will not Canadian farmers grow more carrots, more root crops generally, and less oats? By subsoil ploughing and high manuring, upon a loamy soil, a thousand bushels of carrots may be grown to the acre. It has been found a good practice to soak the seed thirty-six hours in brine and to roll it in plaster. Any light, friable, rich soil will grow carrots.—*American Agriculturist.*

THE ARAB HORSE-DEALER.

The Arab horse-dealer is not the cheat that his European brother commonly is, for he never resorts to any trickeries to disguise the bad points of his horse; but he is most seductively eloquent upon the subject of his virtues.

"Uncover his back," cries he, "and satisfy thy gaze. Say not it is my horse, say it is my son. . . . . He is pure as gold. His eyesight is so good that he can distinguish a hair in the night-time. In the day of battle he delights in the whistling of the balls. He overtakes the gazelle. . . . . He has no brother in the world; it is a swallow. He listens to his flanks, and is ever watching the heels of his rider."

OBITUARY.

We have to record the death, on the 13th ult., at Beverley, of Mr. William Douthwaite, M.R.C.V.S., formerly of South Skirlaugh, Holderness, in the sixty-fifth year of his age.

On the 19th of February, at Bombay, Veterinary Surgeon John Bolton, Cholerton Hall, 8th Brigade Royal Artillery, aged 37. His diploma bears date December 19th, 1855.

ERRATA IN NO. 507.

In page 200, line 27, *for* "Warbold," *read* "Parbold."
" 201, " 2, *for* "Wreston," *read* "Preston."

THE

VETERINARIAN.

VOL. XLIII. No. 509. MAY, 1870. Fourth Series. No. 185.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from p.* 287.)

The *anterior lateral ligament* (fig. 9, *l*) is a short, thick, and wide band fixing the coronary to the pedal bone. It extends in an oblique manner for four fifths of its length along the side of the first-named bone, downwards to the depression (fig. 3, *h*) existing between the base of the pyramidal eminence and the basilar process of the latter bone. The disposition of this ligament is somewhat remarkable. Many of its fibres extend beyond this depression to become fixed into the rugged surface through which the preplantar fissure is cut, and even extend to the inner side of the basilar process, towards the extremity of the navicular bone. The whole of its upper portion and the posterior half of its external face is covered by a large part of the inner face of the lateral cartilage (fig. 9, *m*); and so intimately are the two blended into each other, that they appear as one in this situation. This fusion, due to the reciprocal interweaving of their fibres, is most marked towards the lower end of the ligament, where the posterior lateral ligament also confounds a number of its fibres in the general intermixture. In front, this anterior ligament has its margin closely united to the wide expansion of the extensor tendon of the foot by means of a flat band that passes across from the border of the cartilage to the tendon; it is also con-

solidated directly, a little below this, with the tendon, so as to become identical in texture with it.

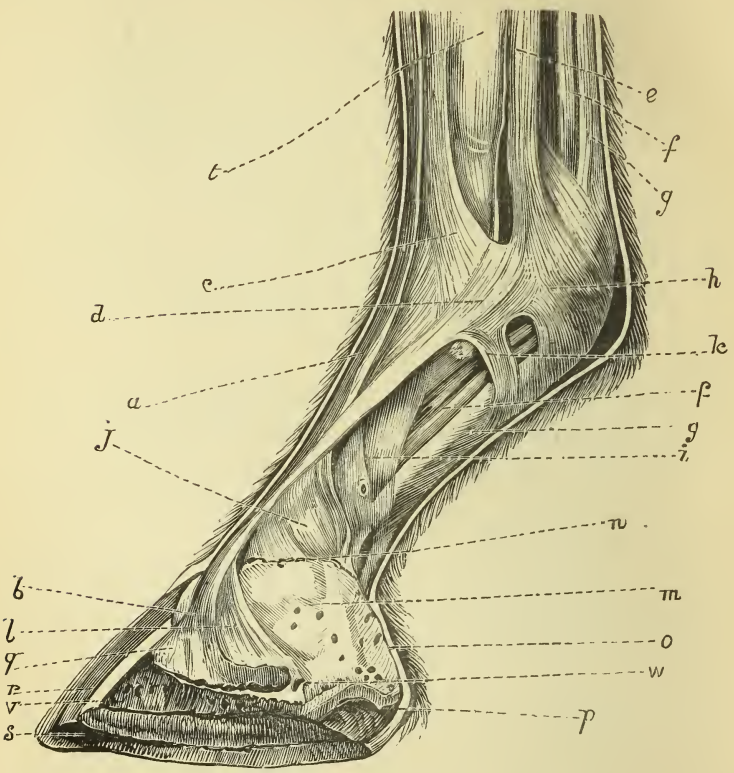


Fig. 7.—Lateral view of the foot, the side of the wall having been removed. *a.* Extensor tendon of the foot. *b.* Its insertion into the pedal bone. *c.* Insertion of the lateral extensor tendon. *d.* Lateral bands uniting the branches of the suspensory ligament of the fetlock to the extensor tendon of the foot. *e.* Suspensory ligament of the fetlock. *ff.* Deep flexor or perforans tendon of the foot. *g g.* Superficial flexor or perforatus tendon of the foot. *h.* Situation of the sesamoid bones. *i.* Reinforcing fibrous bands for the sheath of the tendons. *j.* Accessory sheath of the perforans tendon. *k.* A portion of the fibrous sheath of the flexor tendons. The remainder has been removed to expose the arrangement of the tendons. *l.* Anterior lateral ligament. *m.* Lateral cartilage, with openings on its surface for vessels. *n.* Its upper border. *o.* Its posterior border. *p.* Its inferior extremity. *q.* Pedal bone. *r.* Wall of hoof. *s.* Inner sole of hoof. *t.* Shank or large metacarpal bone. *u.* Lower border of the lateral cartilage. *v.* Horny lamina.

The *posterior lateral liyament* (fig. 8, *k*) of each side is,

of course, behind that just described. It is more oblique from before to behind than the latter, and is in reality only a continuation in the greater portion of its fibres, of the lateral ligament that attaches the first and second phalanges to each other; below this attachment it appears as a somewhat elastic fibrous cord that passes downward and backward, to be chiefly inserted into the extremity and upper border of the

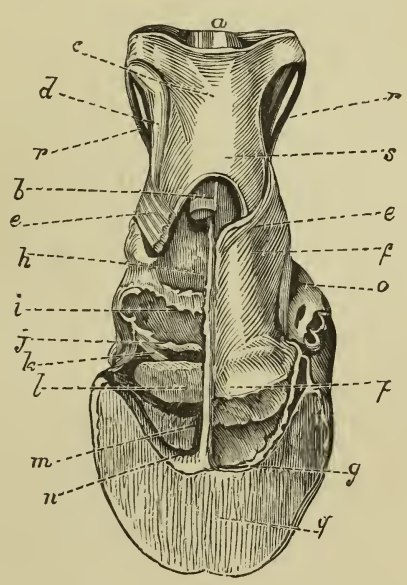


FIG. 8.—Posterior face of the foot. *a*. Deep flexor tendon entering the sheath formed for it by the superficial or perforatus tendon. *b*. Its emergence from this sheath,—immediately below one half of its substance is excised to show the parts beneath. *c*. Perforatus or superficial flexor tendon of the foot,—inferiorly is seen its insertions into each side of the coronary bone. *d*. First phalanx or large pastern bone. *e e*. Lateral reinforcing bands of the plantar aponeurosis. *f*. Accessory sheath of ditto. *g*. Insertion of the plantar aponeurosis into the semilunar ridge of the pedal bone. *h*. Posterior surface of the coronary bone over which the perforans tendon glides. *i*. Its surface for articulation with the navicular bone. *j*. Complementary ligament of the navicular bone. *k*. Posterior lateral ligament passing to the navicular bone. *l*. Posterior or inferior surface of the navicular bone for contact with the tendon. *m*. Inferior ligament uniting the navicular to the pedal bone. *n*. Surface on the pedal bone for the insertion of the flexor tendon of the foot. *o*. Lateral cartilage,—its fellow on the other side has been removed. *p*. Posterior face of the plantar aponeurosis. *q*. Sole of the pedal bone. *r r*. Uniting branches between the suspensory ligament of the fetlock and the extensor tendon of the foot. *s*. Fibrous sheath of the perforatus tendon.

navicular bone, where it unites with its fellow of the opposite side; in this way it forms a kind of complementary pad, ring, or *bourrelet,* as the French hippotomists have named it, that increases the articular surface of that bone. This fibrous ring (fig. 8, *j*), which is closer and denser than the ligaments composing it, is reinforced by additional fibres that endow it with a considerable degree of thickness, more particularly at the extremities of the navicular bone. It is an apparent continuation of some of the fasciculi from this *bourrelet* which constitutes to some extent the basis of the membrane covering the lower face of the bone, and which has been erroneously described as hyaline cartilage. The posterior lateral ligament, outside this ring, sends off a short bundle of fibres to the inner face and base of the lateral cartilage, which blend themselves with the fibres of that body and those of the anterior lateral ligament. It also throws out a small band from the extremity of the navicular bone, which is inserted into the inner face of the retrossal process, and which, from its situation, tends to strengthen the ligament next to be described, and in this way assures the solidity of union between the pedal and navicular bones.

The *inferior* or *interosseous* ligament (fig. 8, *m*) is single, and is composed of short unequal fibres that pass from the roughened lower border of the navicular bone to the posterior and inferior, or solar surface of the pedal bone. It is widest in the middle and narrowest at the extremities of the bone; its fibres are arranged in small parallel bundles, generally somewhat apart, leaving only a thin fibrous membrane between; in the middle and at each end it is usually thickest, and its fibres are continuous with those of the membrane covering the lower or posterior face of the navicular bone. In the fore foot it is strongest in the centre, and appears as a thick bundle of fibres that arise from a prominence in the middle of the semilunar ridge, and pass up to the lower end of the transverse ridge of the navicular bone to cover its surface. This is the ligament that fixes the lower border of that bone to the os pedis and prevents its posterior surface tilting upwards in sudden flexion of the limb.

We have now briefly glanced at the arrangement of the ligaments of the foot, and have, perhaps, seen enough to convince us of the complexity of their disposition being more apparent than real, and that, by their situation, structure, union with each other or with tendons or cartilages, this organ is placed at a great advantage, so far as its retentive or contentive apparatus is concerned. We have only now to hurriedly examine the disposition of the tendons of the foot,

closely related as they are, in function, to the articulations; and here we will find that these offer some most interesting and attractive features, not the least striking of which is the part they play in strengthening or reinforcing the ligamentary apparatus of the joints.

The tendons, as is known, are the continuations of the contractile masses of muscle which do not extend below the knee or hock, and are, it may be said, the instruments of these muscles for effecting changes in the direction of the bones composing the limbs. For, in addition to their assisting in forming that magnificent suspensory arrangement so conspicuous in the fore, less so in the hind, limbs, their principal function is as inert locomotory agents, subjective to the power of the muscles to which they are united by their upper extremities. Their disposition and wide relations with the parts they cover or adjoin, as they approach that portion of the limb we are considering, are very wonderful, becoming, as they do, quite altered in shape, receiving accessory bands from powerful ligaments, attaching themselves to subjacent bones in their course towards the last phalanges of the member, growing attenuated and yet gaining strength, until they ultimately terminate in a manner which affords them the best opportunity for developing their special functions.

The *anterior extensor tendon of the phalanges or foot* (fig. 7, *a*) leaves its muscle above the knee, and after undergoing some modifications and losing its companion tendon on the shank bone, continues its course over the front of the fetlock until it reaches the large pastern bone or first phalanx of the limb, where, from the elliptical-shaped cord it had been downwards from the knee, it gradually commences to expand to a wide dense web that adheres to the face of the bony ray beneath, and to each of its sides by two fibrous bands (fig. 7, *d*), detached from or joining the tendon, that pass over the second phalanx, and blend themselves with the terminal branches of the suspensory ligaments of the fetlock (fig. 7, *h*) ; the tendon then passes easily through a special synovial capsule, which facilitates its movements over these bones. At the articulation between the first and second phalanges it spreads over the lateral ligaments on each side and is firmly united to them; it also contracts an adhesion with the head of the second phalanx by inserting a number of its fibres around the articular margin. As it passes over the joints it attaches itself to their synovial capsules, and, proceeding downwards, it receives on each side branches from the ligaments already described, which not only strengthen it but

ensure unity of motion; and it also receives what is called an aponeurotic band that extends from the inner face of the wide pedal cartilage across the surface of the tendon, mixing its fibres closely with it. Finally, when it arrives at the pyramidal process of the os pedis, it is a broad but thin fibrous web encircling a large portion of the joint of the foot, and becomes implanted into the anterior face of that process (fig. 7, *b*) by diverging fibres.

The *deep flexor tendon of the foot* (fig. 7, *f*), when it has passed over the back of the fetlock and reached the coronary bone, also becomes transformed from a round to a flattened shape, to adapt itself to the particular requirements of this region. Without diminishing much in thickness, it nevertheless widens out gradually into a broad band, which, at its termination (figs. 8, *g*; 9, *d*), has breadth enough to fill the space between the wings of the pedal bone, into the semilunar ridge of which it is implanted. In its course from the fetlock to the plantar surface this important tendon forms adhesions, or is more or less connected, with bones and fibrous structures, which still more intimately ally it with the functions of this region, enhance its powers of flexion, and render it at the same time a source of additional strength to the joints behind which it passes. In this way it is first maintained in close apposition against the pulley-like gliding surface behind the small coronary bone, by a fibrous sheath that passes around and binds together the two branches of the perforatus tendon, near their insertions into that bone (fig. 8, *s*). This gliding surface (fig. 3, *k*) is covered by a fibro-cartilaginous and a synovial membrane, and shows a beautiful and more or less complete arborisation of vessels over its entire face. Behind the lower end of the large pastern bone, and commencing by some bundles of fibres that spring from the synovial sheath through which the tendon passes, this cord receives the insertion of a ligament or membrane mainly or entirely composed of yellow elastic tissue. This membrane is at first very thin, but soon covers the face of the tendon as it glides behind the upper end of the second phalanx, and increases in thickness to a notable degree. Below the gliding surface it abruptly leaves the tendon, and implants itself into the middle of this phalanx and the upper border of the navicular bone (fig. 3, *l m*), not only connecting these very closely, but also forming a septum between the capsule of the foot-joint and the extensive tendinous bursa behind and above it. This yellow elastic ligament is in appearance markedly different from the tendon, being of a dull yellowish hue, and in texture fine and close. Joining the

tendon above the upper end of the coronary bone, and blending itself closely on its inner or anterior face, it passes down covering this face, and, gradually, the borders of the tendon, by its fibres radiating slightly outwards, in a contrary direction to those on this side of the latter. On arriving at the navicular bone, as has been said, this elastic ligament leaves the tendon and inserts itself into the upper border of that piece to form what has been termed the "bourrelet." Thus it will be seen that through the medium of this band the navicular bone is directly connected with the second phalanx and the deep flexor tendon, none of the fibres of which, however, go to fix themselves in the bone or to form this "bourrelet," but pass uninterruptedly downwards, so that at the upper border of the navicular pulley all connection between the ligament and tendon ceases. This ligament must be looked upon as playing the part of a suspensory or sustaining ligament, in so far as the tendon and navicular bone are concerned. At this point the tendon begins to commence its passage over the lower face of the navicular bone, and the relations it here establishes, as well as the shape and alteration in texture it assumes, have a particular and important bearing in the physiology and pathology of this region. Gradually becoming flattened and widened as it approaches the upper margin of the navicular bone, it somewhat suddenly expands laterally, so as to occupy nearly the entire posterior face of that bone, presenting more the appearance of a wide membrane or band than a tendon. It continues to expand until it reaches the semilunar ridge, into which, and on both sides of which, it is fixed, its middle fibres attaching themselves to the ridge, the inner and shorter ones within it, and the outer and longer beyond it. Here, as has been said, the tendon becomes so expanded that it occupies not only the whole ridge, but implants its outermost fibres on both sides into the inner face of each retrossal process, where they are confounded, to some extent, with those of the plantar cushion.

Above the navicular bone, and from the moment when it begins to widen, the perforans tendon offers a peculiar arrangement of its fibres, whereby one set would seem to become antagonistic, as it were, to another. Thus, above the navicular bone the tendon appears, and really is, divided before and behind by a superficial longitudinal groove into two halves (fig. 9, *a*); the posterior fibres incline *downwards* and outwards from the groove, while those on the inner or front aspect look as if passing in a contrary direction, passing upwards and outwards (fig. 9, *a*) from the centre.

From this disposition it might be inferred that we have two distinct planes of fibres crossing the direction of each other, and consequently forming a stronger cord than if they had

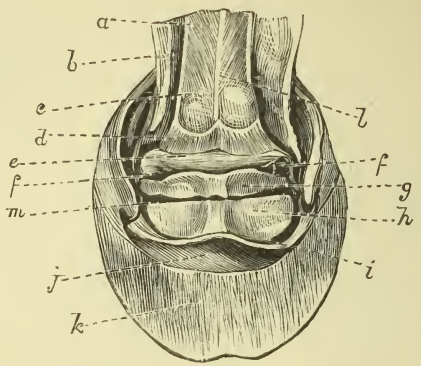


FIG. 9.—The two articulations of the foot viewed from above, after removal of the coronary bone. *a*. Anterior face of the flexor tendon of the foot. *b*. Its accessory sheath. *c*. Its surface for contact with the navicular bone. *d*. Its diverging fibres for insertion into the pedal bone. *e*. Complementary ligament. *ff*. Upper borders of the lateral cartilages. *g*. Upper or anterior face of the navicular bone. *h*. Articular face of the pedal bone. *i*. Pyramidal process. *j*. Surface for insertion of the extensor tendon of the foot. *k*. Anterior surface of the pedal bone covered by the vascular laminæ. *l*. Point of insertion of the yellow elastic ligament. *m*. Anterior border of the lateral cartilage.

all been arranged in parallel bundles. A careful examination will demonstrate, however, that in reality the fibres of each half of the tendon are continuous behind and before; the posterior fibres passing downwards and outwards from the groove behind, turn round the border of the tendon and converge towards the middle of its anterior face, giving it a different appearance. This arrangement is not observed in the fibres of the superficial flexor tendon.

Behind the navicular bone the fibres on the anterior face (fig. 9, *c*, *d*) become altered in their course; the longitudinal division is more marked than above, consequently here the expansion is thinnest; the division or groove is adapted to the transverse ridge on the navicular bone; the two surfaces—tendon and bone—being accurately fitted to each other, greatly contribute to prevent the tendon from moving to one side or the other during progression. The fibres on this face also appear to become looser in texture; the bundles, though still offering the nacrous glistening lustre of tendon, are wider apart, and altogether are so much attenuated and expanded as

to have received the rather incorrect designation of "plantar aponeurosis." Those nearest the centre usually continue to *converge* towards the middle; those next them proceed direct to be inserted into the pedal bone; while the fasciculi towards the sides diverge to implant themselves into the extremities of the semilunar ridge and the adjoining wings of the pedal bone (fig. 9, *d*). In by far the largest proportion of feet dissected by me, I have found one, or even several, bundles of fibres connecting the lower portion of this face with the middle bundle belonging to the inferior navicular ligament, and which passes on to the transverse ridge of that bone. This connection has an important bearing upon the pathology of this region. Other bundles are also sometimes seen towards the sides of the tendon and ligament. On this surface, at the parts corresponding to the most prominent portions of the convexity formed by the lower face of the navicular bone, the fibres are more closely pressed together, and, particularly when in a dried state, show the imprint received from the contact they sustain with that bone (fig. 9, *c*). These are the portions of tendon which, in cases of navicular disease, are in nearly every instance most deeply involved.

Behind, the central and most posterior fibres converge and diverge, cross and intercross, before insertion, so as to form a strong fibrous web.

Behind and in front this tendon is well supplied with blood-vessels; some even pass through its groove from behind, above the navicular bone, and supply the membranes covering it and the face of the tendon.

The concurrent attenuation and expansion, and consequent weakening of this important tendon at a part where it ought to be most solid and powerful—as it passes over the angle formed by the navicular pulley—is largely compensated for by a curious, yet admirably disposed fibrous web or sling, first described, I believe, by Professor Bouley of Alfort.

This fibrous accessory apparatus of the deep flexor tendon (figs. 7, *g*; 8, *f*; 9 *b*)* is continuous, above, with the cellulo-fibrous tissue of the region, and covers the fibrous sheath through which the superficial and deep tendons pass between the fetlock and foot, where it soon acquires a considerable degree of thickness, forming two ligamentous bands that are attached to the sides of the lower end of the first phalanx. These pass backwards and downwards, and behind the second phalanx reach the borders of the deep flexor tendon (fig. 8, *f*) as it begins to expand, and spread over its posterior surface until

* The "*gaîne fibreuse de renforcement du tendon fléchisseur profond*" of M. Bouley.

each is united by transverse fibres in the form of a comparatively thick membrane that is at first only applied against the tendon. As the latter, however, diminishes in substance and increases in width, this accessory sheath begins to adhere to it more and more closely, until behind the lower face of the navicular bone—the most vulnerable and severely tested portion of the tendon in some respects—the texture of both has become so intimately fused as to be inseparable; they are completely incorporated. There is no union along the borders of the tendon; this would be unnecessary, and each preserves its autonomy until the retrossal processes are gained, when tendinous and accessory fibres are alike inserted into the inner faces of these, along with the fasciculi from the lateral cartilages.

As has been justly remarked, the terminal expansion of the perforans tendon, when completed by these accessory fibrous structures, may be considered, with regard to the articulation of the foot, as a strong membranous ligament, attached above to the large pastern bone by the two lateral bands just indicated, and below by its attenuated termination to the plantar face of the pedal bone. Viewed in this manner, it will be seen that these powerful supplementary membranes, extending from the sides of the first phalanx to the retrossal processes of the os pedis, assume the office of a third pair of lateral ligaments by still further assuring the solidity existing between the bones of this region; but beyond this, they accomplish a perhaps more essential end in supporting and enhancing the action of the tendon at the instant when it is called upon to flex the foot, and in relieving it from strain when the weight of the limb and body is, either in movement or while in a standing posture, thrown upon it. With another apparatus to be hereafter described, this accessory fibrous membrane, in playing the part of a wide resisting brace, maintains the flexor tendon in its proper situation firmly against the lower face of the navicular bone.

I have already mentioned that the tendons pass through sheaths or bursa that are lined by synovial membranes, which, with their secretion, ensure these cords easy and rapid movement in situations where they would otherwise meet with obstruction and injury, and I have alluded to that in connection with the deep flexor tendon and the navicular bone. In a healthy condition this synovial sac is, perhaps, less vascular than some of those immediately above it, and notably that behind the large and small pastern bones. In the limb of a two-year old colt which I succeeded in injecting most beautifully, this navicular bursa shows a smaller number

of blood-vessels, more particularly on the surfaces of contact, than is observable elsewhere. For instance, the fibrous and synovial membrane covering the posterior gliding surface of the coronary bone is supplied with a very rich plexus throughout its superficies, while the face of the tendon that comes into contact with it is also highly endowed in this respect. With the capsule in question, however, this general distribution of blood-vessels is not observed, though both opposing surfaces appear to be covered by synovial membrane. At the upper and lower borders of this face of the navicular bone loops of vessels advance beneath the synovial membrane as far as the actual gliding surface, and there stop; and this part presents a smooth, pearly, or yellowish-white, *fibrous* appearance. On the corresponding portion of the tendon the same features are noticed; above and below the actual friction surface—that more immediately applied to the most prominent part of the bone—are fine reticulations of veins and arteries, but in the middle, in health, none are seen; only the pearly-white glistening fibres shining through the synovial membrane. This is in somewhat striking contrast with some of the other bursa, and in a physiological and pathological study of this particular region is not without much interest to the veterinary student.

The apparent absence of vessels from these surfaces of contact may be owing to the greater amount of pressure or strain they have to sustain, directly or indirctly, while the animal is standing or in motion; the particular functions of the tendon and, in one respect, the disadvantageous angle formed by the navicular bone over which it has to play, imposing upon it a somewhat exceptional degree of pressure from the more prominent convexity of the bone; the fibrous and synovial covering of the latter, of course, shares largely in this pressure and strain.

But there are other features in the anatomy of this part which must not be overlooked, though hitherto they appear to have almost entirely escaped observation, notwithstanding their intimate relationship to the morbid changes that so frequently render valuable horses incurably lame and unserviceable.

As has been mentioned, the spongy nucleus of the navicular bone is enclosed in a comparatively thick and dense shell of compact tissue; the latter is thickest at the surface corresponding to the tendon, and more particularly the lower half of that face—that which is most frequently involved in disease; it is thinnest in the narrow face that articulates with the os pedis, the mean between these two being in the face which is in

contact with the second phalanx. In the navicular bone of the hind foot, the compact osseous tissue is much thinner throughout its extent than in that of the fore foot. Notwithstanding its density, this cortical substance is pierced by innumerable minute canals for the passage of the capillary vessels distributed in its texture, and which ultimately ramify beneath the fibrous membrane on the lower face, or near the deep surface of the hyalin cartilage on the two upper faces of the bone. In some of my preparations these vessels are distended with blood, which forms an excellent natural injection that permits their disposition to be readily traced. The surface and deeper strata of the compact tissue offer the usual histological features of bone—Haversian canals, lacunæ, and their intercommunicating canaliculi. If we take a thin

FIG. 10*.—Horizontal section of the membrane (fibro-cartilage) which covers the under surface of the navicular bone. Magnified 600 diameters.

vertical section of this substance, with its covering (which can easily be examined in the fresh state without any preparatory grinding), from the tendon surface of the bone, parallel with and close to its transverse ridge, and view it in the microscope, these features will be readily made out. Near the surface, however, the canaliculi appear to become scarce, and non-ramifying lacunæ more common than in the subjacent layers. Through the canals blood-vessels pass towards the surface from the cancellated nucleus. This face of the bone is very uneven, and shows depressions whose situation and extent vary in different specimens. Not unfrequently there is a sulcus near or in the middle of the transverse ridge, and here the vessels appear to be most numerous, as is the case in other regions when this kind of cavity is present.

* This illustration was drawn from one of many specimens cut from the under surface of a fresh navicular bone.—EDS.

Above the compact tissue of this face the bone is the fibrous layer, mixed with very minute and not very numerous cartilage-cells (fig. 10), the fibres being densest nearest this osseous surface, into which their extremities are implanted. These fibres, as has been noted, generally pass across this surface in the same direction as the ligaments from which they are derived, and all appear to converge towards the middle or transverse ridge of the bone. A large portion of each side of the face, for instance, is covered by fibres from the ligaments attaching its extremities to the pedal bone, and so on around its upper and lower margins; the ridge itself is covered by a thick bundle proceeding from the centre of the inferior ligament, and from fibres that converge in the middle of its border; the former is particularly strong. So far as I have been able to observe, the yellow elastic ligament forming the *bourrelet* does not give any of its fibres for this purpose. This membrane can be torn off in pieces by powerful traction of its surrounding ligaments, and in points corresponding, of course, to the passage of these fibres across and into the face of the bone. Very minute blood-vessels are not unfrequently observed to pass beneath the membrane for some distance.*

Nearer the surface the cartilaginous element becomes more abundant, and indeed forms a thin and complete layer; and on the surface itself, in very fresh specimens, is a layer of pavement epithelium. These coverings appear to be thinnest on the middle and lower half of this surface—that on which the tendon presses most closely.

A notable peculiarity in the lower or tendon face of the navicular bone, and one which, besides its pathological bearings, would alone appear to distinguish it from the other two faces, covered as they are by ordinary articular cartilage, consists in the marked tendency of its fibro-cartilaginous membrane to become the seat of calcareous deposition. In examining, microscopically, the navicular bones of comparatively young horses which had never been suspected of disease in this region, I have been surprised to meet with calcareous infiltration of the fibrous membrane to a very appreciable degree: minute molecules of calcareous matter being interspersed among the fibres, or forming small, hard, white, and opaque granular masses in the membrane or on the surface of the

* A casual glance at this surface in a fresh specimen will be sufficient to convince the student that it is *not* covered by *articular cartilage*, and a brief microscopical examination will prove the structure of the membrane to be as I have described it. Besides, it must be sufficiently evident that we cannot expect to find articular cartilage where there is no articulation; the lower surface of this bone does not articulate with any other bone.

bone, but without involving the polished face over which the tendon moves. This tendency seems to be more particularly limited to the lower half and middle portion of this surface, the compact and spongy tissues of the bone being at this early period unaltered. The infiltration appeared sometimes to follow the direction of the fibres, and at other times the earthy matter seemed to be more especially deposited in and around the borders of the cartilage cells. In the majority of instances these cells looked as if primarily involved, the fibrous element only undergoing slight thickening in lines and patches; the cells, in this process of calcification, were sometimes enlarged to four or five times their ordinary size, but when not so magnified they were about the dimensions of bone-corpuscles, and offered all the characters of these, even to the presence of canaliculi projecting from their borders. In some of my microscopical preparations these canaliculi and lacunæ are very conspicuous, and the change taking place in these points of the membrane is quite analogous, if it does not exactly correspond, to that observed in the transformation of temporary cartilage into bone. The cells are ossified in groups, and, with their numerous canaliculi, stand out in sharp relief from the healthy portions of the tissue. Each ossific mass constitutes a veritable miniature exostosis, viewed by the microscope. The animals from which these navicular bones had been procured were never, to my knowledge, lame in the fore feet during life.

Other bones I have examined, obtained from horses which had been slightly lame in one or both fore feet for some time. In these the calcareous infiltration was more advanced, and one or more deposits of rough granular particles had taken the place of the fibrous membrane, and frayed or abraded the corresponding fibres on the anterior face of the tendon to a greater or less extent. In these specimens the surface of the compact tissue was, of course, involved, the osteophytic depositions having become fixed on it, and the superficial lacunæ were becoming obliterated; the cancellated structure was unaffected. In several old horses which had died through disease or accident, and which had been more or less "tender" on their fore feet for a variable period before death, this condition was very well marked. Two feet sent to me in November last by my lamented friend, the late Mr. Lawson of Manchester, showed these features very distinctly. On the lower face of the navicular bone of one foot a long thin deposit extended across the transverse ridge towards its lower extremity, and above this, on the ridge itself, and on each side, were apparently isolated granules disseminated in the enveloping membrane,

which was in these places altered in colour, very thin and soft, or had all but disappeared.

The fibres of the tendon were not abraded, for the simple reason that these osseous particles were yet covered by the membrane—each was a "velvety osteophyte;" nevertheless, the portions of the tendon in contact with them were undergoing a change of colour and consistency. In the other foot the alteration had considerably advanced, the whole of the lower two-thirds of the membrane was more or less the seat of ossific transformation; a prominent, but narrow and jagged, deposit had taken place across the transverse ridge in the middle of its lower half; on each side of the ridge were fine but sharp granules, and at the lower margin of the bone, on one side, was an irregular circle larger than the diameter of a pea, from the middle of which the membrane, usually rather thick at this part, had been removed; a mass of bony matter had been deposited in a portion of the cavity, and extended for some distance into the interosseous or inferior ligament of the navicular bone, and the compact tissue was becoming carious in one or two minute points; the membrane had also entirely disappeared from the surface of these deposits, but around them it was thickened and soft, and evidently in a state of disintegration. On the face of the tendon corresponding to the thin sharp lamella across the ridge, the fibres were cut to some depth, and in other points in contact with the miniature osteophytes they were broken and altered in texture and colour. Where they were not broken they showed the imprint of the rugosity. Neither of these bones offered any pathological change in their cancellated structure, and the compact tissue was only involved very superficially at the points where this deposition was taking place. The animal had, no doubt, been lame, particularly in the last-mentioned foot, and the hoofs afforded evidence of this from their soles having been pared very thin and protected by leather and tar and tow.

That the malady known as "naviculartheritis" commences, in the great majority of instances, on the inferior face of the navicular bone, and in its fibro-cartilaginous covering, I entertain no doubt whatever; the microscope—that invaluable aid to the pathologist—so far as I have employed it, settles that matter. I have never been able to satisfy myself that the disease began in the interior of the bone; all my examinations—and they have been numerous—of bones, in every stage of the malady, have been adverse to such a conclusion. The histological anatomy of this region would, *à priori*, almost lead to the inference that disease would be much

more likely to commence on the lower surface than in the spongy tissue of the navicular bone; and pathological anatomy proves that it really is so. The spongy tissue is only involved when the compact had been destroyed, and this may be said to take place towards the later stages of the malady.* In fact, it has appeared to me that the membrane covering the inferior face of the navicular bone behaves not unlike the periosteum covering other bones, and offers the same or similar morbid alterations when affected with acute or chronic inflammation, and that the bone and tendon are only subsequently involved. In some, and by no means rare instances, nevertheless, I am ready to admit that the tendon may be primarily affected, as the result of sudden injury; the army veterinary surgeon has not unfrequently to deal with cases of this description. In general, however, naviculartbritis is essentially chronic inflammation of, and osseous deposition in, the fibrous membrane; only too often followed by its destruction, injury to the tendon, and profound alterations in the texture of the lower face of the bone, and, finally, of its interior. The molecular death or caries of this face of the bone is a very advanced stage of the disease.

The two articular faces are so seldom involved in disease that they may be said to be, as a rule, exempted from its ravages. So much is this the case, that in examining feet that have been affected with naviculartbritis, we do not expect to find anything the matter with these surfaces; though of course when the lower face has been destroyed and the spongy tissue deeply involved, or when the tendon has become seriously and extensively implicated, it is scarcely possible that these surfaces can be maintained in health.

To how great an extent the usual treatment to which the horse's foot is subjected predisposes the fibro-cartilaginous membrane covering the lower face of the navicular bone to inflammation, those who understand the physiology of that organ will be at no loss to comprehend.

So far, then, as our survey of the horse's foot has gone, and accepting this survey more as a proof of design than perhaps as an aid to the prosecution of anatomical or physiological knowledge, we might be justified in asserting that in the disposition of the bones, ligaments, tendons, and joints, a higher degree of constructive wisdom seems to be evinced

* It has been recently stated that this disease usually commences in the centre of the bone, *where the nutrient action is supposed to be lowest.* A glance at the interior of the bone, and particularly if it be an injected specimen, will show that the centre of the most vascular portion. Can we, then, receive the statement that the nutrient action is lowest there?

in this organ than in any other portion of the architecture of the animal body. Every possible device would appear to have been resorted to in order to secure strength, solidity, elasticity, and smoothness of movement by the mutual dependence, or rather adaptation, of one part to another; the parts in front being closely connected with those behind, and both deriving additional power and assurance from each other. All has been wisely planned, even to the most minute detail.

To give but one instance, we might refer to the capsules which I have noticed as encircling the joints like so many sacs, and which are lined by the delicate membrane that supplies the indispensable lubricating fluid. In certain movements of the limbs portions of these sacs become flaccid, and in this condition would be liable to fall inwards between the bones forming the joint, when they would sustain serious injury, or even destruction. To obviate this accident, however, the capsule is made to adhere slightly on its outside to one or more of the tendons passing over it, and these when in motion pull it sufficiently tense to keep it out of the way of danger. A similar arrangement is conspicuous with regard to the sheaths of tendons, to prevent their ruffling and becoming inflamed or lacerated during violent or sudden movements.

EXTENSIVE DISEASE OF THE MEMBRANES COVERING THE LEFT HEMISPHERE OF THE BRAIN OF A DOG.

By Messrs. Gowing & Son, M.R.C.V.S., Camden Town.

History.—On the 2nd inst. our attendance was requested at Brook Street, Grosvenor Square, in respect of a white terrier dog eighteen months old. The history of the case is as follows:—

The owner stated that the dog had been brought from Oxford, and that he had recently lost his vision. On examination it was found that the pupils of both eyes were somewhat dilated, and there was no power of recognising objects; the other special senses did not appear to be interfered with, as the dog recognised his master's voice, and would come to him when called; this he would do slowly and carefully, apparently using his sense of smell as his

guide. The owner was asked if the animal had ever received a blow upon the head, and in reply he stated that he had reason to believe he had met with some injury in the stable, he thought from one of the horses. The owner had had the dog examined at Oxford, and afterwards brought him to London for our opinion. After the examination we felt satisfied that the dog was suffering from some diseased condition of the brain, and that his loss of vision was due to this cause. It was noticed that the dog was steady and cautious in his movements, turning neither to the right nor to the left, yet he seemed perfectly obedient to his master's call. For the purpose of treatment the dog was removed to our infirmary, and general depletive measures were used at first; mild doses of aperient medicine were given occasionally, and some improvement appeared to be produced, as the animal could, after a time, see with the left eye; he recognised his feeder, and ran after a cat that accidentally got into his box. This was so far satisfactory, as indicating that his sight had partially returned; he ate his food and took fluids freely, but on the 15th inst., after his meal, he vomited and seemed much prostrated. The attendant desired us to look at him, as he thought he was considerably worse; he was found lying on his left side, with the head protruded and the nose pointing upwards. There was a rigid condition of the muscles of the neck, the pulsation of the heart was feeble, and it was apparent that the animal's end was approaching. He died at five o'clock p.m.

Post-mortem examination.—On removing the calvarium, it was apparent that effusion had taken place into that part of the arachnoid sac which is reflected over the left hemisphere; a slight puncture, made by the saw while the bone was being removed, was followed by the forcible expulsion of pus-like fluid. The dura mater was dark red in colour, and came away from the bone very easily; the inner surface of the portion under which the effusion had occurred was covered with a soft pulpy mass of pus and recently exuded fibrin, which also was spread over the surface of the hemisphere. This portion of the brain was somewhat diminished in bulk, but no morbid appearances were observed in its structure; in the centre of the substance of the left corpus striatum a recent hæmorrhagic clot was found.

Under the microscope the exudation was found to consist of ordinary inflammatory products, numerous pus corpuscles, large exudation corpuscles, fat granules, and fine white fibres.

Altogether the case appears to possess many points of pathological and physiological interest.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 294.)

There are few people so incurious as not to have had their attention arrested by the peculiar green and brown circles in meadows to which the name Fairy Rings has been given—the name itself, indeed, suggesting a degree of popular mystery and superstition connected with them.

As these rings, then, are so frequently the abodes of different species of fungi, our history of this family of plants would be incomplete without an attempt to unravel some of the mysteries which the rings encircle; we purpose, then, in this article, to review the subject of the origin and formation of fairy rings.

Now, that the new grass of the meadow is beginning its spring growth, we are made aware of the presence of more or less perfectly formed circles, sometimes occupying the undulating slopes of the hill pasture, at others here and there dotting the richer lowlands. These vary in size from a few inches to many feet in diameter; often the circles are most complete and regularly formed, but very many of them are only arcuate, while others appear as though they had been formed of two anastomosing circles, which, by their union, make a double bow.

If we examine them carefully at this time, we find that they are composed of two circles, one within the other, or, rather, each is composed of two bands, an outer one of more or less brown herbage and bare soil, and an inner one of fresh green grass, growing much more luxuriantly than the grass of the rest of the meadow.

In one of our own meadows we only this day examined perfect or imperfect circles to the number of fifty in a space of five acres; of these the smallest was three feet and the largest twenty-four feet in diameter.

Many of these circles consist of a green ring only, but in an orchard at the bottom of this meadow are two most perfectly-formed circles, one of fifteen, the other of twenty-four feet in diameter, in which the brown outer band is very conspicuous; and on yesterday digging up some of the soil, we found it impregnated with the *mycelium*, or spawn of a fungus, emitting an agreeable fungoid odour; and next month we shall hope to gather a good harvest of the "May mush-

room" (Agaricus gambosus), from the larger circle, while, in the summer, the brown ring of the smaller circle will be occupied by the "*Champignon*" (Agaricus orcades). There are other rings on the farm occupied in their turn with *Agaricus arvensis*, our larger catsup mushroom, the *A. personatus*, "blewits," and other "fairy ring species." Sometimes the same ring will produce most, if not all, of these species at different times.

We have here, then, to consider the important fact, which has been hitherto overlooked, that fairy rings either may or may not be occupied by fungi, and hence, then, the theory that the rings are caused by them, to say the least, is not always true.

That fungi are the usual accompaniments of fairy rings is quite true; but, as we shall ultimately determine, these are the results of the circumstances by which such rings are formed, and not the real cause of all the phenomena which we have observed.

Still, that such conspicuous objects as the Agarics we have named are common to these rings is certain, and there is no wonder then that different writers, in explaining the facts, should always refer to the fungi as the true cause of the ring, though, at the same time, this wrong assumption has, as we think, been the source of grave errors in the conclusions arrived at. Thus Professor Way, in a paper on the 'Fairy Rings of Pastures,' in vol. 7 of the 'Journal of the Royal Agricultural Society,' offers the following remarks:—

"Omitting the consideration of the many theories which have been offered in explanation of these curious rings, I shall only remark that by far the most scientific and intelligible solution of the question is that which was based upon De Candolle's theory of exeretion of plants. It was supposed that, from one cause or another, the germ of a fungus or agaric became deposited on some point of a piece of pasture land; that the fungus formed from it, after passing through the various stages of its growth, shed its seeds or sporules necessarily in a circle exterior to its point of connection with the ground, and that, in the following season, a series of these plants was produced in the form of a small circle. This new crop would, in its turn, come to maturity, shedding seeds both towards the centre and on the outside of the ring. Were circumstances favorable to the development of the seeds deposited on the inside of the ring, the diameter of it might increase indeed, but it would have the form, not of a ring with an open centre, but of a flat disc. This, however, does not take place; the fungi of one year are replaced in

the next by a crop of luxuriant grass, to whose superior height and dark colour is due the appearance of the ring itself.

"Now, it was argued, upon the De Candollean theory, that the excretions of the fungus were in the highest degree injurious to its subsequent development on the same spot; but that, on the other hand, they were particularly favorable to the growth of the grass which followed them. It may easily be seen that this explanation is abundantly sufficient for every circumstance of the case, if the theory of De Candolle as to the excretions of plants were generally tenable.

"It is needless for me to remark, however, that this theory has been abandoned by most vegetable physiologists, and has lately met distinct confutation from the laborious investigations undertaken by Dr. Daubeny on the rationale of the rotation of crops. It becomes, then, necessary to seek some other explanation for the formation of the fairy rings. In the spring of this year (1846) it occurred to me to make a chemical examination of these fungi, with the hope of throwing light upon their peculiar growth; and I was favoured with an excellent opportunity of making this examination from several magnificent rings growing on the pasture land surrounding the Agricultural College." Now, we have reason to know these rings, as they afforded us many a meal of most delicious mushrooms, and always about the first or second week in May, and we ascertained them to be the true St. George's Mushroom, *Agaricus gambosus,* referred by Dr. Badham and others to *A. prunulus,* and called by the French *moucheron* or *mousseron,* from its often growing in poor mossy pastures.

It was this species, then, which was analysed by Professor Way, and we here give ash analyses of the fungus, and also of the grass from some of the fairy rings.

Ash Analyses by J. T. Way.

	Fungus.		Grass.
Silica	1·09	...	16·10
Lime	1·35	...	10·47
Magnesia	2·20	...	2·49
Peroxide of Iron	trace	...	2·93
Phosphoric Acid	29·49	...	6·54
Sulphuric Acid	1·93	...	5·40
Carbonic Acid	3·80	...	12·47
Potash	55·10	...	35·23
Soda	3·32	...	none
Chloride of Sodium	0·41	...	5·79
	98·69		97·42

"On the foregoing analyses," the Professor remarks, "I think we may clearly explain the whole growth of the fairy rings. A fungus is developed on a single spot of ground, sheds its seed, and dies. On the spot where it grew it leaves a valuable manuring of phosphoric acid and alkalies, some magnesia, and a little sulphate of lime. Another fungus might undoubtedly grow on the same spot again, but on the death of the first the ground becomes occupied by a vigorous crop of grass, rising like a phœnix on the *ashes* of its predecessor.

"If the grass shared the fate of the agaric, withering and dying on the land, its growth might continue, the circle might increase and remain, as before supposed, in the shape of a disc; but in *practice* this does not occur—the grass is either eaten off by cattle or taken away in the form of hay, and with it is removed the greater part of the inorganic materials which the fungus had collected."

Berkeley, in his 'Outlines of British Fungology,' has adopted somewhat the same views, for, in speaking of fairy rings, he says: "These rings are sometimes of very ancient date, and attain enormous dimensions,* so as to be distinctly visible on a hill-side from a considerable distance. It is believed that they originate from a single fungus, whose growth renders the soil immediately beneath unfit for its reproduction. The spawn, however, spreads all round, and in the second year produces a crop whose spawn spreads again, the soil behind forbidding its return in that direction. Thus the circle is continually increased, and extends indefinitely till some cause intervenes to destroy it. If the spawn did not spread on all sides at first, an arc of a circle only is produced. The manure arising from the dead fungi of the former years makes the grass peculiarly vigorous around, so as to render the circle visible even when there is no external appearance of the fungus, and the contrast is often the stronger from that behind being killed by the old spawn. This mode of growth is far more common than is supposed, and may be observed constantly in our woods, where the spawn can spread only in the soil or amongst the leaves and decaying fragments which cover it."—P. 41.

Now, it may be quite true that the authors quoted have accounted for some of the observed facts, yet, as remarked by my acute friend Mr. Edwin Lees, "Even Mr. Berkeley takes the supposition about the single fungus forming the circle for granted, without due examination himself, and

* We have seen some on Salisbury Plain nearly 30 yards in diameter.—J. B.

says, 'It is believed that such is the case.' Now, after attentive observation, I myself do *not* believe it." After some further remarks, this author makes the following important statement, which we quote as being perfectly in accord with our own observations:—

"All fungi, whether Agarics, Boleti, or Polypores, flourish on decaying substances, and rotting matter of some kind they require as a pabulum of support. Whatever, then, causes the withdrawal and death of grasses in pastures, or displaces the soil, enables the sporules of fungi to settle down, and Agarics, or 'Toadstools,' to appear; and thus we notice them scattered about, without much wonder at their appearance, in the autumnal season; for, as Shelley says—

> 'Agarics, fungi, mildew, and mould,
> All start like mist from the wet ground cold.'

But they do not start without some predisposing cause, or without something or other has caused decay where they arise." *

Here, then, we have the important fact that decaying matter is necessary to the production of our agarics, and it was doubtless this browned and withered state of the grass by which fungi are preceded, that induced some to believe that they were produced by electricity. Thus Dr. Darwin, a botanical poet, says—

> "So from the clouds the playful lightning wings,
> Rives the firm oak, or prints the fairy rings."

And Mr. Lees tells us that 'Mr. J. F. Dovaston, in 'Loudon's Magazine of Natural History,' like Darwin, ascribed the exciting cause of the formation of rings to strokes of electricity,' which, laying bare the ring the first year, by 'the fertilization of combustion' gave rise the second year to a crop of grass 'with highly increased vigour and verdure.' This fertilisation, however, Dovaston remarks, though violent, is of very short duration, and thus the circles soon disappear. It may be well to remark that both Aubrey, Darwin, and Dovaston all believed the rings to be *formed of their full size at once* and by a sudden act, without which, indeed, the idea of dances in the moonlight, made evident when the sun rose, would have been unsustainable."

Shakespeare says:—

* See 'Transactions of the Woolhope Naturalists' Field Club,' for 1868, for these and subsequent notes on this curious subject, by Mr. E. Lees, F.L.S., &c.

"And nightly meadow fairies, look you, sing,
Like to the garter's compass, in a ring;
The expression that it bears, green let it be,
More fertile fresh than all the field to see."
Merry Wives of Windsor.

But we must not follow the poets in this matter, but must deal with the facts as we find them. That rings do appear one year where they were not observed before, we have the testimony of our men confirming our own observations.

We have also the examples of rings within view of our present study, which have not increased in size for the last seven years, as also of many which have never been tenanted by fungi.

Still we have repeatedly seen that whatever tended to kill the grass might be followed by fungi of one sort or another; thus, the spots where grass has been killed by cow-droppings, will often produce the common mushroom—places where the turf has been destroyed by dressings of salt, guano, superphosphate, or any highly stimulating manure, will often be afterwards occupied by mushrooms, puff-balls, or others of the family, and that different species so commencing, may form rings on the centrifugal theory, we are not prepared to deny, though we confess to being in possession of but little evidence in support of the theory, and Mr. Lees, as well as previous writers, have confessed to no little difficulty in the matter. Indeed, Mr. Lees has started a notion altogether novel, which, as he looks upon the mole as the author of the so-called fairy rings, has been dignified as the moler theory, of which the description from the paper already cited, we now quote in his own words:—"Now, having paid close attention to these appearances for many years, and not merely looked to the fungus growing in the circle, but to the circle itself, this close observation tells me that, in a great majority of cases, the original disturbance of the soil in a circular or semicircular form, is due to that little mining animal, the mole (*Talpa Europæa*). His gyrations close under the surface of the ground are very remarkable. In making his runs he disturbs the roots of the grass, and the grass itself withers and dies in the round that he has made. This offers a pabulum to the wandering sporules of fungi not to be neglected, and they seize upon these rounds accordingly, and once there, make an occupation of the ground for as long a time as favorable circumstances allow, and then fly off elsewhere. For an uncertain time their occupation increases the size of the ring, but they do not originally form it. The ring is increased, too, not by the sporules of the

plant scattered about, but by the perennial underground *mycelium*, which slowly spreads, until it is killed by meteorological causes, or like other plants, dies out from exhausted vitality."

This author gives diagrams of mole tracks, in support of his theory, but the following objections to his view of the matter appear to us insuperable.

1st.—Fairy rings may constantly be seen where the mole has never been noticed, as in our own meadows.

2nd.—Moles even when they make tracks do not kill the grasses, but, on the contrary, make such grasses grow more luxuriantly.

3rd.—Fresh upturned soil is not favorable to the growth of fungi, but, on the contrary, these seem to be favoured by the presence of decaying matter, and our May mushroom especially is nourished by the roots of dead and decaying grasses. The quantity of phosphoric acid and potash in both grass and fungus will show that the one is fed on the elements of the other, and the use of phosphatic manures has tended to the growth of the common mushroom even in our arable fields.

Seeing, then, that so much has been said and written on the subject of fairy rings which is not deemed conclusive as explaining the phenomena connected with them, the question may be asked, Is there a better solution at hand, or is there anything to add in elucidating what has already been advanced?

Now, without presuming to lay claim to the first position, we may yet endeavour to add to observed facts, and we shall therefore in our next give an account of our own observations and conclusions upon this interesting subject.

(*To be continued.*)

TWO CASES OF PURPURA WITH INTESTINAL SUBMUCOUS HÆMORRHAGE.

By J. T. Thompson, M.R.C.V.S., Sheffield.

On reading an account of a case contributed by Professor Brown in the May number of the *Veterinarian* last year, I was struck with the great similarity to one that occurred in my practice in the summer of 1866, and having recently met with another of the same character, I thought a short history of them might be interesting to the readers of that journal.

No. 1 was an aged 'bus horse, that had been rather out of sorts a few days from cold.

On being called to him I found extensive swellings on the inside of both thighs and about the lips. I diagnosed the disease to be purpura hæmorrhagica, and treated the animal with stimulants, laxatives, and mineral tonics. On the fourth or fifth day the owner sent to say that the horse had got the colic: on my arrival I found him in pain, but not of so violent a character as horses usually suffer in intestinal disease. He would lay still for half an hour together, with the exception of now and then raising his head and looking back at his sides. Then he would get up and paw the litter, walk round the box a few times, and lie down as before. The pulse was quick and weak, and the breathing accelerated; but the horse did not sweat much until a short time before death, which took place in about twelve hours after the commencement of the pain. On post-mortem examination being made the whole of the internal viscera were found healthy, except about eight inches of the posterior part of the duodenum which were quite black, and on cutting the bowel open I found the canal nearly obliterated by blood, effused under the mucous membrane. There was a small portion of injesta retained in the contracted part. The fæces in other parts of the intestine were of a natural consistence.

The second case occurred to an aged mare which was used for running in a light dray. About six weeks ago she met with a severe accident and had not worked since. On Saturday, the 12th of March, she was brought to me, the attendant stating that she appeared dull and moved very stiffly. On examination I found a slight swelling, firm to the touch, just under the larynx, and another on the inside of the off thigh. I suspected I had a case of purpura to deal with, and on seeing the mare next morning was convinced my diagnosis was correct, as the enlargements had considerably increased, and similar ones had appeared on the near thigh and under the sternum. I gave Ol. Terebinth. et Liq. Ammon. Acetatis night and morning, and a dose or two of calomel. On Tuesday, the 15th, I was glad to find the swellings decreasing, and that no fresh ones had commenced, but the following morning my hopes were blighted by the intelligence that the mare was in great pain. I went to her as soon as possible and found her uneasy, lying down and getting up frequently; but the pain was not so severe as we sometimes find it. The under lip was a good deal swollen, and there was a petechial spot on the mucous membrane about the size of a shilling.

I immediately concluded that the case would terminate

fatally, and wished the owner to have the animal destroyed, but he was not willing to do so. She, however, died in six hours, and an examination three hours afterwards revealed a precisely similar state of the internal organs as in the first case, with this exception, that the effusion had taken place close to the pylorus, and had also extended a few inches further.

SUBCUTANEOUS INJECTION OF MORPHIA IN COLIC AND ENTERITIS.

By W. Fearnley, V.S., M.R.C.V.S., Leeds.

For some time I have been using the hypodermic method of administering various remedies; and there is one remedy (and that a potent one) for colic and enteritis which I should like to see take the place of the ordinary "gripe draught;" the agent is a preparation of morphia syringed under the skin.

I shall have some difficulty in describing what I have to say on this subject in a reasonable space in your valuable journal, so that I cannot enter into the history and striking results of the practice of exhibiting medicines; however, I will take the liberty of quoting a few observations on the subject from a pamphlet written a few years ago by Charles Hunter, Esq.* At page 54 this gentleman sums up the following practical conclusions:

"1. That certain medicines may be introduced into the cellular tissue beneath the skin with safety and with advantage.

"2. That medicines so introduced have a general as well as local effect.

"3. That the general effect of medicine so introduced is exceedingly rapid.

"4. That the mode of administration is more certain in its action—that is, the action of a stomachic dose;—for the exact amount is known, and the whole of it takes effect, which may, or may not, be the case with stomachic doses; which may, on the other hand, be retained unabsorbed, vomited, &c.

"5. It is also, and for the same reason, a more trustworthy method for certainty of the action of a remedy, than are the endermic, enepidermic, lingual, and rectal methods.

"6. Medicines are more purely received into the system

* "On the Speedy Relief of Pain and other Nervous Affections by the means of the Hypodermic Method." London: John Churchill and Sons.

by this method than when given by the stomach, in which organ they may become contaminated or decomposed.

"7. A given amount of medicine employed hypodermically has greater effect upon the system than the same amount administered by the stomach.

"8. Medicines are more rapidly absorbed into the system when thus administered than by the stomach. The desired effect is, therefore, more quickly gained.

"9. A given amount of medicine employed hypodermically has a greater and more rapid distant effect than when employed endermically, epidermically, or retraleptically.

"10. That the medicines for which this mode of introduction is especially applicable are the various narcotics and sedatives, hypnotics, and nerve tonics.

"11. That this plan of treatment is more especially indicated for the relief of affections of the nervous system:

"1stly. Where the immediate and decided effect of the medicine is required.

"2ndly. Where medicines administered by the usual methods fail to do good.

"3rdly. Where the effect of a medicine is required, and the patient refuses to swallow.

"4thly. Where from irritability of the stomach or other cause (such as idiosynerasy, &c.) the patient cannot take the medicine by the stomach.

"12. That to produce a general effect, it does not signify whether the remedy be injected into the cellular tissue of the body or of an extremity.

"13. That to relieve or cure a local neuralgic affection, there is no necessity to localise the injection.

"14. That whether the object be to treat a local or general affection, it seems advisable each time to change the site for injection, should it be more than once required.

"15. That this mode of introducing medicines is the most accurate one we possess for testing their true action upon the system generally.

"16. That antidotes to certain poisons can by this mode be rapidly introduced into the system."

I have used the hypodermic method in perverted functions of the spinal and sympathetic nerves, affections of the vascular system and in blood disease. Colic is the most frequent disease from perverted functions of the spinal cord in the horse, though we have frequently to treat tetanus, partial paralysis, epilepsy, and rheumatism. In diminishing vascular action and inflammation, such as in peritonitis, pleurisy, pericarditis, enteritis, ophthalmia, &c., I have found the

most astonishing results following the introduction of morphia preceded by general venesection. Further, in various forms of lameness, it acts more like a charm than anything I can think of. In some future communication I may give you particulars of interesting cases, but for the present I will confine my remarks to the treatment of colic and enteritis.

What we want in cases of colic is something to deaden the pain and act as an antispasmodic. Subcutaneous injection of morphia does this instantly, and if the case be one of pure spasms of the intestine from deranged nerve-functions, and nothing more, we need no other remedy whatever after giving the morphia. I order all food to be kept away from the horse for six hours afterwards, and the horse to be kept warm and still. At the end of that time a little water with oatmeal in it may be given, and the animal fed as usual afterwards.

In cases where we have flatulence after using the morphia, I give a pint or a quart of raw linseed oil containing a little chloric ether, and rub the abdomen with a rail having two folds of horserug wrapt round it. A man at each end of this contrivance can effect a good deal. By means of Gamgee's enema funnel (the best and simplest way I know of giving an enema) the rectum is quickly filled with warm water, which, by-the-bye, is frequently retained for half an hour, thus permeating and fomenting the intestines. In cases of obstipation causing colicy symptoms, after the morphia, I give the orthodox remedies, such as purging mass and linseed oil. The morphia here, by numbing the pain and preventing death from nervous exhaustion, allows time for the laxative to act or, at all events, to move on the obstruction.

In enteritis, which more frequently follows or is a concomitant of colic than a purely idiopathic affection, I have had equally satisfactory results as in colic by this method. When we get to a case, and find that a horse has begun with the "gripes" some time before, and has had the ordinary "gripe draughts" with no very good results, as is often the case, we must first of all ascertain whether we have enteritis or not. When I find the pulse higher than sixty, mouth hot, visible mucous membranes injected, constant pain, &c., I bleed freely from the neck, and after the bleeding (not before, and not during the letting of blood) inject the morphia. It has increased effects under these circumstances. I was very much pleased, on reading last month's *Veterinarian*, to see that so excellent a pathologist as Professor Williams advocates keeping the inflamed parts as quiet as possible—indeed, we are not justified in requiring inflamed bowels to work, any

more than we should an inflamed joint. Our safest plan is to let the bowels alone, or at most to apply soothing remedies, such as a little oil and ether, until such time as we have evidence of the pain and tumefaction having subsided; even then we must proceed with caution, and by no means give aloetic balls containing much aloes. A gruel diet, with occasional injections per rectum of thin gruel, is really all that is needed for some few days, leaving the rest to *vis medicatrix naturæ*.

The action of morphia injected under the skin is remarkable. The pulse instantly rises, the system glows, and the horse often breaks out into profuse perspiration, then the pulse sinks below what it was before the injection by many beats, and the patient falls asleep. My friend, Mr. Cuthbert, tells me that a horse he gave five grains to slept twenty-four hours after it. They most frequently sleep from two to six hours after a good dose, though I once had one sleep I dare scarcely tell the number of hours. I had given him fifteen grains of the morphia. It was when I first began the practice, and had not ascertained the dose; however, he would have died under the old system, and as it was he made an excellent recovery.

That it deadens pain instantly and effectually let me give one instance. In the summer of 1868 Mr. Smith, of Carlton Hill, Leeds, had a brown horse taken ill at 1.30 o'clock p.m. with griping pains. At two o'clock I saw him. The attendants could not, and had not, been able from the first to keep the poor brute on his legs. I used the usual remedies, such as antispasmodic draughts, purgatives, injections, &c., without relieving the pain one tittle. Giving this up in despair, I thought I would use my (to me) new remedy. At six o'clock I injected some morphia. He immediately arose, and stood without moving a limb, until he dropped down dead at eleven o'clock. A *post-mortem* disclosed twisted intestine, torn and highly discoloured. The pain would probably have killed sooner, but does it not show what a powerful weapon we have in combating these fearfully painful complaints in our syringe with solution of morphia? for the cause of the pain would be present equally after as before the injection which gave such permanent relief. Some may ask why I waited from two o'clock until six before having recourse to the morphia. I was then young in the practice, and having such a violent case before me dare not step out of the beaten path. I am glad to say that it confirmed my opinion of the value of the method, and I have not lost a horse from either complaint since.

The preparation of morphia known as the bimeconate is the best, and the solution of 100 grains to the ounce is as fine as sherry. The dose I believe to be between two and five grains, which may be repeated if necessary; though, in another part, at least two inches from the first puncture.

I select the skin over the pectoral muscles, just on the top of the arm. The injection is easily done; the operator grasps the skin between his left thumb and under finger, and drags it away from the flesh, while he pushes the syringe point through the skin, and then empties its contents.

The whole of the medicine is taken up at once into the circulation, whereas ten times the quantity given by the stomach, if the stomach be full, as it often is in these cases, might be unabsorbed or absorbed so slowly as to allow the disease to kill the patient. Let every veterinarian think how many patients he has seen die without appearing to be at all benefited by the large and repeated doses of antispasmodics given by the mouth.

It is a very economical practice too. Opium is now very dear. One drachm of the morphia carefully dispensed costs half a crown, and is equivalent to a great amount of the crude drug.

Human surgeons give one sixth of a grain under the skin when they find that a patient would take one grain by the stomach, so that it is calculated to be six times more powerful given by the former method. Again, we must bear in mind that morphia is only one of the active principles of opium, and when one will serve our turn the rest we waste in giving the crude drug.

The syringe is expensive, but will last for many years, care being taken to keep it clean by syringing a little clean water through it each time after using it.

I hope you will not think me tedious. I have given these details in the hope of inducing every member of our noble profession to give his patients the benefit of this invaluable practice.

TRACHEOTOMY.

By J. Adams, Warminster.

Three months since I was requested to examine a black cart horse which had for several years been doing work, shunting on the Great Western Railway, at Warminster, and from his hardiness and activity in that particular work was of considerable value to the company. I was informed that up

to within a month of the time I saw him he had continued to work without any abnormal symptoms, till one day, having been put to somewhat harder work than usual, he suddenly stopped as if choked or suffoeated. Being unable to continue work he was taken to his stable, where a farrier administered some medicine and blistered the throat; he was allowed to rest for some days, but when again subjected to his regular work all the former symptoms presented themselves as on the previous oecasion. Again and again was he submitted to the skill of the horse doetor, but as often as tried he as often failed, until the owner, tired of the trials, was persuaded to have him destroyed; but before doing so he, as before intimated, submitted him as a forlorn hope to your humble servant. I at onee put him through his paees at a moderate speed for the purpose of witnessing the symptoms whieh had been so graphieally described to me, but without deteeting ought save a very slight defeet in respiration. I here had him submitted to a more trying ordeal, when he stopped suddenly and exhibited symptoms of spasms of the glottis, almost falling down apparently nearly suffocated. Diagnosing the case to be one in which some defeet existed in the nerves or muscles surrounding the larynx, whieh on too great pressure from the volume of air produced the distress, I resolved at onee to try traeheotomy upon my patient. This was aceordingly done, and one of Arnold's tubes inserted. The next day he was sent to his usual work on the line, and although put to the hardest trial no symptoms of his former spasm supervened, and he has now been in work for upwards of three months, working in eomparative ease, breathing in part through the tube to the eomfort of himself and the delight of his owner. This case serves to demonstrate that a little physiologieal knowledge may enable its possessor to sometimes supersede the pretensions of the uneduеated.

TREATMENT OF NASAL GLEET BY TREPHINING THE SINUSES.

By Salisbury Price, M.R.C.V.S., Kennington Cross, London.

Thinking that an aceount of trephining might interest many of your readers, I beg to hand you the following partieulars:

In the early part of December, 1869, I was called to see a

horse suffering from a severe nasal discharge of a fetid character on the off side. On investigating the history of the case I found that the horse had done no work for three months; the discharge with the accompanying debility being so great as totally to incapacitate him.

After a careful examination I came to the conclusion that he was suffering from an extension of catarrhal disease to the facial sinuses, and that trephining was the only remedial measure calculated to be beneficial. In this opinion Professor Pritchard, who afterwards saw the case, fully concurred.

After the administration of mineral tonics for a week I cast the horse for the operation, and commenced by applying the ether spray, which answers well for all cutaneous operations with the knife. On opening the frontal sinus the appearance of a quantity of thick white pus immediately proved that our diagnosis was correct. I then directed the ether spray to the maxillary sinus, on trephining which a very small quantity of pus exuded, the fetor of which was considerable.

On further investigation of the sinuses I found that some of the inner plates of the frontal bone were affected with necrosis; this condition of parts accounted for the great fetor which existed.

After clearing the sinuses by means of probes, forceps, syringes, warm water, &c., and taking away as much of the diseased plates of bone as possible, I allowed the animal to get up, and had him placed in a loose box.

The following day there was scarcely any discharge from the nose, but a quantity from the openings which I had made. After having the sinuses well syringed with warm water for two or three days, I applied a weak solution of Cal. Chlor. in order to destroy if possible the great fetor, which had been daily increasing: by application of the solution twice a day for a week I succeeded not only in freeing the sinuses from fetor, but likewise the pus. This treatment was followed up by a weak solution of Zinci Sulph. In about three weeks the discharge had entirely ceased from the nose. The frontal and maxillary sinuses and the wounds in the skin had partially healed over. The horse was put to work, and has been at work every day since.

When I saw him last week the only symptom which had not been effectually subdued was a slight faint smell from the nostril, but in every other respect he was perfectly well, and evidently not in the slightest degree suffering from constant work.

QUACKERY IN THE VETERINARY PROFESSION.

By John Shives, V.S., St. John's, N. B.

Perhaps no regularly qualified graduate of any science commenced the practice of his profession without experiencing the opposition of "quacks," and the more ignorant the said quacks may be, the more virulent and presumptive they are. The veterinary profession is no exception to this rule; it would even seem that, for certain reasons, quackery is making a harder fight in this than in any other profession. One reason may, no doubt, be found in the infancy of the science, coupled with the barbarous treatment held forth by pretenders in the art and the somewhat intractable character of the patients to be operated on. These would doubtless deter many young men, capable of mastering the science in detail, from hazarding the experiment.

Now, however, that circumstances have changed, and a rational mode of treatment, based on well-defined principles, having taken the place of the former syatem, or rather no system, and young men of excellent education and abilities occupying the seats in the Veterinary Colleges, we have a right to expect that quackery will hide its diminutive head.

That it has not as yet done so, however, is obvious, and we now proceed to notice what, in our humble opinion, are the sources of its prolonged vitality.

There are men in all communities discontented with the calling they may be engaged in, or tired of having *none*, who, having seen some presumptuous "spirits" knock out a comfortable living by "doctoring by rule of thumb," wish to keep this door, so easy of access, open, with the hope that when they have learned to *bleed*, they may by that means reach fame and fortune. To compass this they keep puffing every pretender, their aim being to exalt him at the expense of the professional. Besides, this effort to bias the minds of the public in favour of the quack often culminates in deliberate falsehood when they wish to excuse or magnify their *hero*, or to vilify the regular practitioner. The impertinence of such men is wonderful; no effort is spared to bring forward their man on every possible occasion, giving him the chances of all such cases as would probably recover without any treatment, leaving only such cases as bleeding will neither kill nor cure for the professional; but, as a rule, they have put them beyond human skill before they send for him. Next comes the interested "druggist," who furnishes "horse

aloes, oil of spike," and such like, to some one of these pretenders; and although he is generally one of the lowest of his class, he can use his tongue with a view to keeping his own pot boiling as well as his patron.

The proclivities of horse-dealers are too well known to require any notice here. We ought not, however, to forget the man of "iron rings," who, according to his own account, could tell you more for a glass of brandy than you would learn at college in six months.

But more potent than all these are—1st. The lamentable ignorance which characterises too many of the owners of animals concerning the first principles of pathology and medicine, thus rendering them an easy prey to every specious pretender. This can only be remedied by their giving some attention at least to these and kindred subjects.

2ndly. I would remark, save us from our friends. There is a certain class of gentlemen, officers in the army and others, whom we have great pleasure to see taking an interest in the science, but, unfortunately, they seem to be unable to raise their views beyond the good old times when the art was considered a mere adjunct of horsemanship, and connected with a series of gymnastics closely allied to what we have heard described as "ground and lofty tumbling," and seem to think that the most important part of practical veterinary surgery consists in agile movements around the animal, in picturesque attitudes, and in heroic manipulations.

Now, while we admit that the science must stand on its merits, or fall through its demerits, we, in common with every British subject, have a right to fair play or a right to grumble. And here is the *rub*. The quack is not indebted to the examination of the animal for his diagnosis, he is the child of inspiration entirely. He merely goes about the horse for *semi-effect*, and unless the seat of disease be very obvious, it is a mere matter of choice. He will probably say the animal has got the *bòàts*. If he be from the "green isle," it will be the *bătts*, and should you inquire any further as to how these monsters got there, or what was the nature of them, the only answer vouchsafed would be a look, in which a physiognomist would be puzzled to tell whether pity or contempt predominated.

A veterinary surgeon must be a little more cautious in his *pronunciamentoes*, and must take proper steps to secure accuracy, no matter how ungraceful the position may be which he has to assume to gain it.

Did Principal Williams, of the Edinburgh Veterinary College, obtain his acumen as a nosologist and success as a

practitioner by charming admiring eyes, that he might become the *hero* of vulgar minds? We think not. And his hints on these points ought to be borne in mind by every student who had the privilege of listening to his *excellent lectures.*

We hope our veterinary friends will not trouble themselves about *scenic effect* in going about a horse, but simply study to go about examining him or administering to him in a scientific systematic manner, doing it with firmness, caution, patience, and kindness; if they do this they can hardly do wrong. And we sincerely hope our *honorable* friends will be more discreet, and forbear to stick out pegs for quacks to hang their conceits on.

I could add it is a pitiful sight to see a professional stultify himself by trying to combine the thoroughness of the surgeon with the adroitness of the *harlequin,* and, as a matter of course, failing in both. I have seen such, and I came to the conclusion, more in grief than in anger, that he was "the more a fool the more a knave."

Pathological Contributions.

CATTLE PLAGUE.

According to the latest information which we have received from the East of Europe the cattle plague was on the increase in Poland, having broken out in several fresh districts during the past month. Precautionary measures were still in full force on the frontier of Prussia. No fresh outbreak is reported from Hungary, but cases continue to occur in Transylvania. The Pashalik of Erzeroom is said to be free from the plague, but the malady still lingered in Trebizond.

PLEURO-PNEUMONIA.

The facilities which still exist for sending cattle out of diseased herds in Ireland into England and Scotland have largely contributed to an increase of the cases of pleuro-pneumonia during the past month. Thirty-eight counties are now infected, the total number of centres of the disease being 132.

Many fresh cases have also occurred in the London dairies, both among cows which have been inoculated, as well as those which have not been subjected to this operation.

FOOT AND MOUTH DISEASE.

Our information from the Continent shows that the mouth and foot disease has only slightly decreased in Lombardy, although it has disappeared from many other countries of Europe. In Great Britain the malady still continues to show itself in fresh localities, arising chiefly from the local authority not preventing the movement, to fairs and markets, of cattle which have only recently been affected, and whose systems cannot be said to be yet free of the morbific matter.

Fifty-five counties are still suffering more or less, while the total number of centres of the affection amounts to 863. The number of farms returned for the first time up to the second week in April was 223.

RICKETS IN LAMBS.

In our last number we inserted an extract from the *British Medical Journal* on rickets in the lower animals, and took occasion to remark that we should make some observations on the disease commonly known as rickets in lambs. The affection thus designated was, upwards of twenty-five years since, so far investigated as to prove to our satisfaction that its pathology was in no way allied to that diseased condition of the osseous tissue which constitutes the rickets of man. The bones of rickety lambs differ in no respect as to the relative amount of animal and earthy matter from those of the most healthy animals. The affection is in reality congenital defect of the soft tissues, involving especially the *ligamentum teres,* which is elongated, even at the time of birth in some instances, to allow of partial luxation of the hip-joint. As the young animal advances in life, however, this elongation increases, so that almost exclusively by the power of the muscles surrounding the joint, the head of the femur is kept in the acetabulum. Hence lambs are said to become rickety when a few weeks old. It is difficult to account for this pathological condition of the hip-joint being so frequent in lambs, and especially so when it is borne in mind that on many sheep farms the cases are periodic in their occurrence. Under ordinary circumstances, in a flock of 300 or 400 ewes, a lamb or two may be affected, for a few years in succession, when a time arrives at which the cases will number even as many as 30 to 35 per cent. Heath-land farmers suffer most, and especially those on whose farms "black sand" abounds. It is believed in Norfolk that if marl be spread on the surface of a black-sandy soil to improve its agricultural value, and the "in-lamb ewes" be fed on the turnips which are sown in the ordinary course of

cultivation, that causes are brought into operation which will suddenly augment the number of cases of rickets. It is not unfrequently observed that one lamb of a twin birth is rickety, the other being perfectly well. The affection, although congenital, is not hereditary. Rickety ewes, which had been bought as lambs from heath-land farmers and taken into valley farms, are often kept for breeding—the range of pasturage over which they travel being both limited and fruitful, thus enabling the ewes to keep up their condition—and it is not found that their lambs are affected with the disease. Even on heath-land farms the same fact has been often observed. No breed of sheep seems to be exempt from the disease, nor does it matter what may be the age of the ewes or of the rams, nor whether the ewes are kept exclusively on turnips, or have a supply of manger food.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the number of foreign animals brought by sea to ports in Great Britain, which on inspection on landing, within the month of March, 1870, have been found to be affected with any contagious or infectious disease, specifying the disease, and the ports from which, and to which, such animals were brought, and the mode in which such animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Antwerp...	London ...	Foot-and-Mouth.	...	...	...	35	35	35
„ ...	Newcastle-upon-Tyne	„	...	...	...	26	26	26
Dort	London ...	„	8	...	...	...	8	8
Geeste-münde ...	London ...	„	2	...	...	...	2	2
Hamburg .	London ...	„	12	...	...	...	12	12
„ ...	Hartlepool	„	4	...	...	...	4	4
„ ...	Newcastle-upon-Tyne	„	1	...	...	...	1	1
	Total ...		27	...	...	61	88	88

"ALEXANDER WILLIAMS,
"Privy Council Office, Secretary.
"Veterinary Department, 14th April, 1870."

THE VETERINARIAN, MAY 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

THE PROPOSED VETERINARY PATHOLOGICAL SOCIETY.

SINCE we referred to the subject of the formation of a central veterinary society two months ago, some considerable progress has been made in the direction which was then indicated; indeed so far has the matter advanced that if we have again to chronicle a failure we shall at the same time congratulate the members who have concerned themselves in the arrangement of preliminaries, on a nearer approach to success than has hitherto been achieved. The duties of provisional secretary have been undertaken by Mr. Armatage, who has enlisted in the cause many members of the profession, the number of which will, we doubt not, be largely increased at the forthcoming annual meeting.

While Mr. Armatage is working quietly to secure the assistance and presence of those gentlemen whose names will at once give an aspect of stability and genuineness to the new society, we may take time by the forelock in order to anticipate some objections which are certain to be offered, as to the advantages of such an association, by the few who see no good in anything like onward movement, unless it be in the direction of business and is capable of being definitely expressed in the form of so much return upon the outlay in current coin of the realm. Truly we are not so rich a profession as to be able to despise the solid results of professional labours, but there is an implied obligation on our part to render an equivalent for the fees which we receive, and the public has a right to demand that a professional man shall leave no means untried to add to his power to deal successfully with animal disease in the way not only of cure, but also of prevention.

To this important end a pathological society would largely contribute in many ways; take a single illustration of a perfectly simple and practical line of investigation, the possible good results of which are wholly incalculable.

There are many diseases of animals about which very little beyond the bare facts of symptoms and morbid appearances are known; it can scarcely be questioned that the veterinary profession is bound to investigate all these problems in pathology with the hope of effecting their solution; but in the present state of the profession investigation is quite impossible. Individual members may devote their spare hours to the prosecution of inquiries which are barren of any really valuable results on account of their want of relation to each other, but of deliberate and exhaustive examination of the important subjects which year by year become urgent in their demands upon our attention there is none and can be none until the proper machinery is set in action.

Assuming for the moment that the Veterinary Pathological Society was at present in perfect working order, holding its meetings regularly every month, and being meanwhile in correspondence with members all over the kingdom, how perfectly practicable an investigation on any given subject would then become. We may select as a probable question for inquiry, "blood poisoning" with its many forms, "black quarter," "splenic apoplexy," and other morbid states which have no distinguishing appellations at all, or are known only as "distempers." Members of the Society residing in localities where these diseases are rife might be formally delegated to the work of inquiry in sections which should include every phase of investigation. Nothing that might throw light on the causes, nature, cure or prevention of the malady would be neglected, and under such a system of analysis is it too much to say that we should possess more extended and exact knowledge of this class of diseases at the expiration of a year after the commencement of the work than we have gained by spasmodic and intermittent investigations which have ended in unpractical speculations ever since we became a profession? There would be no fear of the Society languishing for want of mental food; the danger would really lie in the opposite direction, and it would need careful piloting for some time to avoid the danger of being wrecked on the huge masses of dark ignorance and prejudice which have too long stopped the way.

Extracts from British and Foreign Journals.

ROYAL AGRICULTURAL SOCIETY.

MONTHLY COUNCIL: Wednesday, April 6.

Mr. Wells, M.P., reported that in order to give effect to the resolution arrived at by the council at their last meeting, the committee recommended that a sum of £25 be placed at the disposal of Professor Simonds for making experiments in pleuro-pneumonia, especially with regard to preventive measures. The committee had received the report of the governors of the Royal Veterinary College, as well as a communication in reference to the resolution passed at the last meeting of the council. The report having been adopted, the last-mentioned communication was read as follows:

ROYAL VETERINARY COLLEGE, *March 23rd*, 1870.

My Lords and Gentlemen,—The governors of the Royal Veterinary College having considered the communication from the council of the Royal Agricultural Society, dated March 3, 1870, beg to express their hope that the amount of the grant of £200 a year from the Royal Agricultural Society will not be diminished.

In proof of their earnest desire that the objects of the Royal Agricultural Society shall be attained, they beg to place the £50 a year, which they have for some years appropriated to the purchase of specimens of disease in cattle, sheep, and pigs, in the hands of the council, and have made arrangements to the extent of their accommodation for the reception of any cases the council may forward to the college: and, further, the governors of the Royal Veterinary College request the council of the Royal Agricultural Society to transmit to them such subjects for investigation to be undertaken in the college as they may decide upon, and the governors will instruct Professor Simonds to conduct such investigation.

The governors have instructed Professor Simonds to report the circumstances connected with the diseases manifested in such specimens as may be provided by the council, and the treatment thereof, to each meeting of their "committee for general purposes," which meetings take place quarterly, and from which such reports will be immediately transmitted to the council.

The principal is requested to transmit the communication now agreed upon to the council of the Royal Agricultural Society.

I have the honour to be, my lords and gentlemen, your obedient servant,

C. N. NEWDEGATE, Chairman.

To the Council of the Royal Agricultural Society.

It was then moved by *Lord Bridport,* and seconded by *Colonel Challoner*—

"That the request contained in this communication be complied with."

A discussion then ensued, in which *Mr. Thompson* supported the motion, and *Mr. Jacob Wilson* explained the views of the committee, and their reasons for not acquiescing in the request of the governors of the college. On the question being put to the vote, Lord Bridport's resolution was lost by nineteen noes to six ayes.

The report of the governors of the Royal Veterinary College having been read, it was moved by the *Hon. H. G. Liddell, M.P.*, seconded by *Mr. J. D. Dent, M.P.*, and carried unanimously—

"That this council call the attention of the Privy Council to so much of the report of the governors of the Royal Veterinary College as relates to rinderpest, and urge the Privy Council to take this report into their immediate and careful consideration."

Extracts from the report of the governors of the Royal Veterinary College to the council of the Royal Agricultural Society:

During the past year (1869) events have occurred which tend to prove the increasing importance to the members of the profession of a complete and practical acquaintance with the diseases of farm stock, and especially with those which, normally existing in a mitigated form, are likely to assume an epizootic character, and occasion serious loss to the farmer, although they may not be essentially malignant in their nature. Such, for example, is the malady commonly known as "mouth-and-foot disease."

Some interesting cases of disease of the skin of lambs were brought to the notice of the students. The disease possessed all the characteristics of the affection known as *Crusta lactea* in the human infant. The parts principally affected by the morbid action were the sides of the neck of the animal; but, in some cases, even the shoulders were ultimately attacked. Thick crusts of a dark colour covered the skin, which was also much inflamed and cracked. The young animals suffered much from local irritation and symptomatic fever, under which some of them sank. The cases, however, were not numerous in the several flocks in which the disease appeared, not more than six or eight among 150 to 200 animals. Application of the oxide of zinc ointment proved beneficial; but careful nursing and protection, both from hot and wet weather, were needed as adjuncts to the treatment.

Some other novel cases occurred in lambs, in which death resulted from parasites existing on the skin. The parasites in question were those commonly known as ticks (*Ixodes Ricinus*). These parasites abound in most countries, and are met with both on wild

and domesticated animals, firmly attached to the skin, from which they draw blood as their food. Until now they have not been found on animals in Great Britain to an extent to be injurious to health, much less as causing death. In hot countries, however, and particularly in many parts of South America, these parasites attack animals in such vast numbers, that even oxen succumb to the irritating and exhaustive effects of their attacks. Specimens of the skin of lambs, thickly covered with these epizoa, were sent from Kent by the veterinary surgeon who had been consulted on the case. In his communication he writes that "they had attacked the sheep and lambs both on uplands and marshes, and that one farmer found a large quantity of them on some colts which were at pasture near to the sheep."

There are few parasites more tenacious of life than ticks, but experiments having shown that they can easily be destroyed by carbolic acid, it was recommended that a trial should be given to dipping the sheep and lambs in a diluted mixture of the acid. This proved most effective in the destruction of the ticks, and thereby prevented a further loss of lambs.

The chief event of the year in connection with cattle diseases has been the remarkable outbreak of the malady known as the mouth-and-foot disease. Few parts of Great Britain have escaped; and in one instance, at least, the disease was ascertained to have been introduced into Ireland by cattle exported from England. In Ireland, however, the malady has been kept far more in check than elsewhere by sanitary regulations, as the executive of the Government in that country was enabled to enforce the Orders of Council through the medium of the constabulary.

Another contagious disease of cattle has excited a good deal of attention, namely, pleuro-pneumonia; and in addition to the legislative provisions for its suppression a revival of the system of inoculation by way of prevention has been resorted to. Experiments for this purpose have been begun in several parts of the country, but chiefly in Norfolk and Cheshire. Some of the results have been published; but in the present state of the inquiry no correct deductions can be arrived at from the data obtained. It may, however, be reasonably doubted whether the results will so far differ from those which were obtained in 1852-53 as to justify the adoption of the system.

That no fresh introduction of the cattle plague has occurred within the year is a subject of sincere congratulation. The disease has been more than usually rife in many parts of Eastern Europe, and early in the year made its way from Hungary into Lower Austria, showing itself in several places, and among these in some villages near Vienna.

The latest intelligence which has been received is far from reassuring.

The plague had entered Silesia from the south-western districts of Poland, and although it was quickly stamped out, the state of things was so threatening, that both the Prussian and Austrian frontiers had to be strictly guarded by the military. It may be thus hoped that Western Europe will be protected from further loss through this

most malignant and infectious disease, but that Poland, Galicia, Hungary, Transylvania, and Buckowina, will suffer severely from the outbreak cannot be questioned.

With reference to another foreign disease—the smallpox of sheep—it may be mentioned that the Government measures, which required that all foreign sheep should undergo a quarantine of fourteen days, or be slaughtered within four days at the port of landing, proved most effective in securing the country against the introduction of the malady.

Passing from foreign to home diseases of a contagious nature, it may be mentioned that scab in sheep has been exceedingly prevalent during the year. This disease is essentially parasitic in its nature—the analogue, in fact, of itch in the human subject. It is not difficult of cure, and many of the popular remedies are sufficient for the purpose. These, however, often fail in effecting a cure, as also must the best chosen remedies, for want of sufficient care in their application. Each sheep, in turn, should be well examined, and the agent applied to every spot where the disease is found to exist. In all places where "scabs" are met with, they must be well broken up with the fingers before the agent is used, otherwise neither the *Arcari*, nor their ova, will be destroyed.

OXIDATION OF IRON.

Dr. F. C. Calvert, in a paper published in *Comptes Rendus*, gives a full description of a series of experiments made with the view to establish precisely the causes of and conditions under which iron rusts. The author comes to the conclusion that the carbonic acid, as well as the watery vapour, contained in the atmosphere concur jointly in causing iron to rust. Prof. Chevreul makes the following observations on this subject:—Claude Bourdelin was the first who observed (in 1683) that ammonia is formed when aërated water acts upon steel. In 1720 E. F. Geoffroy found that iron rust formed in the air contains moisture and ammonia. Vauquelin found ammonia in the specks of rust formed upon a chopper, of which it was suspected that it had been used for murdering somebody; the presence of ammonia in iron rust should, therefore, be cautiously dealt with in medico-legal questions. According to Dr. Calvert, pure iron does not decompose pure water at the ordinary temperature; and, if this is correct, the fact observed by Prof. Chevreul, that the white hydrated peroxide of iron decomposes water, becomes more interesting.

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

JAUNDICE IN THE DOG, AND ITS TREATMENT.

By M. Weber, Veterinary Surgeon, Paris.

The author believes he does not exaggerate in saying that up to the present time jaundice in the dog has been considered by veterinary practitioners as generally, if not always, mortal, and that therapeutics were powerless to combat it.

The authors who have written on the disease, it must be acknowledged, were not well acquainted with it, and therefore not very competent. It is more particularly in the treatises on sport that we find any description or treatment of this malady, hence very different theories and treatment have been produced without resulting in any benefit either to science or to the patient.

Some veterinary authors, however, have treated the question, and have tried to connect it with a certain order of anatomical lesion; but in many cases these anatomical lesions are insufficient, at least, according to the results of my experience.

Before proceeding, it is important to state what I understand by jaundice; it is not every malady in which the yellow icteric tint is often a symptom of a more serious organic lesion, and which it would be useless to attempt to cure, that should be considered as jaundice. The jaundice in the dog, such as I have often been able to observe, is, like the icterus, simple and grave in the human subject, and it is of this form only that I intend to treat; it corresponds to the malady in man described by M. Ozanam as *Icterus, essential, character, grave,* and which has also been designated as *Icterus malignus.*

In a great number of cases the icteric tint is a symptom connected almost always with some serious lesions (such as rupture of the liver, abscesses, and cyst, in the same scirrhous tumours, obstruction and ruptures of the gall-ducts, intestinal invaginations).

The *icterus benign,* so frequent in the human subject that it is considered of very little consequence, is very rare in the dog. On the other hand, the *icterus grave* is nearly always fatal; but, notwithstanding, at the autopsy there are rarely found anatomical lesions sufficient to account for the death, or the gravity of the symptoms during life.

Sex does not appear to have any influence in the production of the malady—male and female are alike subject to it, though the number of males that came under treatment

might be greater. Neither has age any influence; the malady attacks both young, adult, and old, without distinction.

Though it is often difficult to trace the cause of the affection, I believe I am not far out in saying that the most frequent causes of this malady are—(1) excessive action brought on by fatigue, (2) long journeys, (3) prolonged sport, (4) sudden chills, (5) external violence, blows, &c., (6) abuse of emetics and purgatives, (7) obstinate constipation. Thus the malady prevails among setters and pointers a few days after the opening of the shooting season; in hounds after a long run, and particularly in dogs which are not very fast, and are forced to keep up with the pack composed mostly of hounds of great speed; in dogs which follow carriages for long distances; and in retrievers which, after being heated, go into the water to recover the game.

It also prevails among dogs which are left in the charge of keepers, and, as often happens, are subjected to strong drastic purgatives, or to emetics, with a view to cure the distemper; also in those animals which receive blows and kicks, too often in wanton thoughtlessness and cruelty, or accidental compression in the region of the liver. Finally, the obstinate constipation so frequent in dogs condemned to live in large towns, seems to me to have a large share in the production of this malady. It is said that anger, combats amongst them, fright, &c., might cause jaundice.

The first signs of the affection are variable, but most frequently the following symptoms are observed: dulness, prostration, difficulty in locomotion, arched back, acceleration of the pulse, nose hot and dry, mucous membrane of a bright-red colour, mouth dry and hot, staring coat principally on the back, abdomen hard and often tender in the region of the liver, and in a very short time seems as if adhering to the back. The animal soon refuses all food (liquid and solid), but there is an intense thirst, and the dog will not drink anything but pure water. Often the animal seems to be troubled with colic; soon supervenes a symptom which is rarely absent, that is, bilious vomiting, which is very frequent and often mixed with blood; the urine becomes of a dark colour and bloody, constipation is frequently present, but sometimes there is diarrhœa, the excrements being bloody, and often the dog voids pure blood. At this stage the malady is easily recognised by an experienced eye, but soon there is no possibility of doubt, as the yellow tints set in, the mucous membranes are the first invaded by it, but soon the skin also shows the icteric tint. This tint varies sometimes from straw colour to dark yellow.

The pulse now becomes weaker and much slower, the urine

has a more decided yellow tint; the animal becomes more and more feeble, gets up with difficulty, and exhales a peculiar disagreeable odour from the mouth, the weakness becomes extreme, the emaciation is visible, the extremities grow cold, the animal becomes now insensible to surrounding objects, and death terminates the scene. Sometimes the malady lasts only two days, but in general the duration varies from two to five days.

In some cases a cough supervenes, with acceleration of the respiration, and an affection of the lungs complicates the malady (M. Leblanc). If the animal is bled in the course of the disease, the blood exhales a peculiar odour and the serum is tinted with yellow. From the moment the yellow tint appears the fæcal evacuations become often greyish-white; at the commencement of the malady, they are of a blackish colour and frequently mixed with blood.

The termination of the malady, up to the present time, has been most frequently mortal; some cases of cure have, however, been recorded, but so rare that they have been rather the exception, death being the rule. The pathological alterations, without being absolutely constant, are in the generality of cases as follows:—All the tissues are coloured yellow, the mucous membrane of the intestine is sometimes the seat of pathological alterations, but at others is perfectly healthy. The liver in certain cases is enlarged, in others diminished in size; the coloration also varies in this organ, and it often shows no alteration; but one thing, which I have always found at the autopsy of dogs who had died from the jaundice, is the accumulation of bile in the gall-bladder; this is of a yellow-greenish colour and very thick. In the presence of these pathological lesions it seems that jaundice in the dog is not an incurable malady. The only question to resolve is how to find therapeutic agents to combat the torpitude of the liver at the commencement of the malady.

The author acknowledges that the microscopical investigations necessary to complete the study of the pathological lesions have completely failed.

As often happens in maladies considered almost as incurable, the treatment of this disease in the dog has been most varied. Some have employed the antiphlogistic system, bleeding, and revulsives, others purgatives, others tonics; all these means have nearly always had the same success—that is, some patients have recovered by chance; notwithstanding all that could be done, however, the majority have died, sometimes of the malady, at others of the treatment. We will pass in review the remedies recommended by the different veterinary authors who have written on this malady.

M. U. Leblanc, whose writing is the most complete on the jaundice of the dog, recommends repeated bleedings at the commencement, manna, sulphate of magnesia, enemas, with the addition of starch and laudanum; if diarrhœa is present disacordium half a drachm. He insists on hygienic means; panades, with the addition of butter, for which broth is to be substituted afterwards; clean, warm, dry quarters, &c.

Hurtrel d'Arboval, inspired by the writings of M. U. Leblanc, also recommends bleeding at the onset, mucilaginous drinks, with nitre, emollient enemas, &c.

M. Prudhomme says that the treatment of jaundice in the dog does not often succeed, as it is one of the most fatal maladies of the canine species. He has, however, obtained some favorable results from small repeated bleedings, whey drinks, mucilage from decoction of linseed or carrots and barley, to which were added a few grammes of cream of tartar, enemas with starch and opium.

Professor Hertwig, of Berlin, employs emetics, slight purges, as, for example, calomel with honey, or cream of tartar, friction on the abdomen, with ammoniacal liniment.

M. C. Leblanc recommends baths with bran water, leeches on the abdomen, emollient enemas, sulphate of soda (if constipated), mustard on the chest and feet. He adds that if an improvement does not speedily set in death is certain.

M. Lafosse advises the same means as those directed by M. C. Leblanc, the decoction of carrots and cream of tartar; if extreme debility sets in to have recourse to quinine wine.

The author says he has tried all the remedies suggested, and despairing of the results, asks himself the question whether an agent could not be found which has a special action on the liver and the biliary system powerful enough to combat this terrible malady. Another question was whether the icteric colour depended really on bile being mixed with the blood in jaundice, as has been asserted, or whether it is owing to an incomplete separation of the elements which constitute the bile from the blood, in consequence of the liver not performing its proper function.

"I am inclined," the author says, "to the latter supposition, seeing that the icteric colour supervenes principally when there is atrophy of the liver, and also in the adipose liver, and when the substance of this organ has been invaded by the tissue of foreign substance, such as cancerous tumours, it cannot be supposed that in these cases there can be a superabundant secretion of bile to mix with the blood; it seems infinitely more simple to admit that the function of the gland is insufficient to separate the elements of the bile

from the blood, and the liquids and solids are soon pervaded by the icteric tint."

This view, however, the author does not take credit for, as several physiologists have considered the bile as an excremental product. According to M. Colin, the bile is thick and viscous in proportion to the secretion, being less abundant —which is, moreover, the case also with other secretions. These physiological views seem to be completely borne out by pathological facts; consequent on these reflections I have thought it important to search for some remedy that was capable of restoring the function of the liver in jaundice of the dog. The author continues:

"After several attempts I fixed on the chloride of mercury (calomel), the purgative properties of which have been admitted; but after having administered this drug in purgative doses without satisfactory result, I resorted to it in alterative doses, and the results obtained have been beyond my expectation, so that there is no case of true jaundice of the cure of which I despair at present.

"Without, however, pretending to have cured every case, I can affirm that since I am in possession of this remedy the fatal termination of the malady has been very rare; while before the cures were exceptional, and death the rule; but the method of administration is not a matter of indifference. The medicine must be given in small doses three or four times a day, without, however, carrying it to purging. As soon as that supervenes, the dose must be decreased, and stopped altogether for a time, if the purging is violent. The dose is from five to ten centigrammes, to be made up in pills, given from two to four times a day. This is to be continued for a few days if purging does not set in; if, on the other hand, purging occurs the dose must be reduced or suspended altogether, until it has stopped.

"The administration of the calomel in the form of pills is preferable, as the agent is insoluble in water, and the suspension in other liquids is at best unsatisfactory and uncertain; enemas slightly charged with laudanum are to be given in accordance with the indications. If the dog is able to eat, he is to be allowed food, avoiding all salted substances. After four or five days of the administration of the medicine, an abundant salivation set in, but I have not had this followed by inflammation of the stomach or gangrene of the mouth; in some cases, however, there is loosening of the teeth; this was the case particularly with a young terrier, which had taken the calomel for five days in doses of five centigrammes three times a day. The animal lost five teeth, but recovered of

the jaundice. The medicine may be given for the first four days at the rate of three pills a day, two on the fifth day, afterwards reduced to one, and discontinued altogether when the state of the patient admits of it."

The author gives several cases of jaundice in the dog successfully treated, but which would take up too much space.—*Recueil de Médecine Vétérinaire.*

ROYAL COLLEGE OF VETERINARY SURGEONS.

REPORT OF PROCEEDINGS AT THE QUARTERLY MEETING OF THE COUNCIL, HELD APRIL 6TH, 1870.

The PRESIDENT in the Chair.

Members present—The President, Professor Spooner, Professor Simonds, Professor Brown, Professor Gamgee, Mr. Broad, Mr. J. C. Broad, Mr. Cartledge, Mr. Cartwright, Mr. Ernes, Mr. Fleming, Mr. Hunt, Mr. Moon, Mr. Morgan, Mr. Withers, the Secretary.

The *Secretary* read the notice convening the meeting.

The minutes of the last meeting were read.

Professor Brown moved the adoption of the minutes.

The motion having been seconded,

Professor Spooner said the minutes, as they had been read, implied that the Council determined to institute the practical examination at the next meeting of the Court, whereas it was no such thing. They were, therefore, not correct with reference to the proceedings at the last Council meeting. He further said that the "garbled" statements with which they were furnished through the agency of the *Veterinarian* were a thorough disgrace to the Council. He was made to say things diametrically opposite to what he did say. If they were to have a published statement of the proceedings at those meetings, it should be a correct one, and some person should be responsible for its correctness. With reference to the conclusion come to at the last Council meeting, it was that the institution of the practical examinations should be a subject for future consideration, because it would be unjust to compel pupils, who had entered at the colleges with an understanding that they would have to submit to the usual examination, to undergo this additional one.

Mr. Morgan pointed out that the ambiguous phrase occurred in the fourth paragraph of the Report, which had been adopted at the last meeting, and was inserted in the minutes. It was not, therefore, a question of the correct-

ness of the minutes. It would be as well if Professor Spooner would point out the remarks in the *Veterinarian* which were "garbled," as they could then be compared with the reporter's notes.

Professor Gamgee said the Council rendered every possible assistance to the Editors of the *Veterinarian* in obtaining correct reports of its proceedings, and, in his opinion, a certain amount of responsibility rested with the Editors of that Journal, if they chose to publish garbled statements therein. So far as the minutes were concerned, it was clear that they did not correctly represent the conclusion at which the Council arrived, and some addition must, therefore, be made to them.

Professor Simonds, as an Editor of the Journal, disclaimed any personal responsibility for the correctness of the reports furnished by the Council. The Council engaged its own reporter, drew out its own report, and sent that report to the *Veterinarian*. All that the Editors had to do was to see that, when published, it was readable English. If it was thought the matter was of value to the *Veterinarian*, all he could say was, he should be glad to get rid of it entirely, were it not for the sake of the profession.

Professor Gamgee called attention to the fact that the question as to the correctness of the published reports had no bearing on the matter now before the Council, namely, the adoption of the minutes.

Mr. Ernes inquired whether these reports were taken from the shorthand writer or from the Secretary. Professor Simonds had impugned the discussion altogether; but he did not exactly understand whether it was the discussion that was blamed or the reporter. If it was the discussion that was disgraceful, then the whole Council was implicated.

The President said there was a considerable difference between the statements ultimately put upon the pages of the *Veterinarian* and the words taken down by the reporter. The mass of shorthand notes were considerably abridged, and the sense might in some manner be slightly altered; this was done by the reporter.

Professor Simonds said that was the very thing. He did not complain of the Council, nor the way in which the discussions were carried on, but of the statement which was sent for publication. The matter rested not with the Council, but the Committee appointed for the purpose of drawing up or condensing the report for publication.

Mr. Ernes thought they had better abolish the Committee and leave the matter solely in the reporter's hands.

Professor Spooner suggested an alteration in the report of the Committee, as it appeared on the minutes, with reference to the place for holding the examination.

Professor Gamgee said that it was the report of the Committee which had been adopted by the Council, and could not now be altered.

The President said the report was put to the Council and carried, and if the matter had been left there, it would have been his duty to have instructed the Secretary to give notice to the different Colleges that the examination would take place. But a resolution, proposed by Professor Brown, was carried to the effect that a copy of this report should be forwarded to the authorities at the Colleges for their consideration. That had been done. He could do no more than comply with the motion.

Professor Brown said his resolution was framed for the purpose of showing that the Council did not intend to enforce the examinations at once. The fact that the Council directed the President to confer with the College authorities was to be taken as an indication that they did not intend to ask for the practical examination this year.

Mr. Withers.—We determined on the postponement of the practical examinations to next year.

Professor Brown said that was what his resolution was intended to indicate.

Professor Spooner said they could not practically adopt that report. It was all very well for the Committee to say the present state of the Court of Examiners could effect the purpose; the present state of the Court of Examiners he did not hesitate to say could not effect it.

Mr. Morgan said there seemed to be an attempt to shelve the practical examination altogether. He objected to its postponement, and thought some commencement ought to be made. He objected to any alteration in the report, or any addition to the minutes. The report was adopted and approved in January, and now by a side wind they wanted to get rid of it.

Professor Spooner said he was totally at a loss to know what had been said by any member of the Council that could give rise to the suggestion that there was any desire to shelve the question, or to get rid of it by a side wind. Nothing had fallen from any member of the Council to warrant such an assertion.

Mr. Morgan.—If words have a meaning at all, you have said enough since you came into this room to lead me to believe it.

Professor Spooner.—Then your comprehension of what I have stated is very dull indeed.

The President thought the intention of the Council clearly was that the practical examination should not take place this year. Professor Brown's motion was tantamount to the expression of that opinion.

Mr. Withers suggested that the minutes might be signed if something of that kind were added.

Professor Simonds protested against any addition being made to the minutes.

Professor Spooner said that slips of the report for the *Veterinarian* should be sent round to the different speakers for revision. Things were sometimes reported that ought never to appear in print at all.

Mr. Withers appealed to the Council to know what they should do to advance the minutes. The two professors appeared to be adverse to the minutes, and yet objected to any modification of them.

Professor Simonds said his objection to any addition to, or subtraction from the minutes was, that it might form a dangerous precedent.

Mr. Fleming, said having been present at the last Council meeting, it was his opinion that the examination as reported upon should be carried out this session. But towards the end of the evening it was the feeling of the Council that it must be more fully considered, and he left with a not very clear idea of what was to take place. Certain duties were entrusted to the President with regard to consulting the heads of the schools, and that was where the matter ended.

The President said he had received communications from the Colleges of Edinburgh and Glasgow, in which they expressed their willingness to carry out the practical examination this year, if it was agreeable to the other Colleges. He had not yet received a communication from the London College.

Professor Spooner.—Am I to understand if those minutes are signed that this proposed practical examination is to take place during the present month?

The President.—Certainly not.

Professor Spooner.—If that be so I am satisfied.

The minutes were then confirmed.

Letters were read from Mr. Alexander Lawson, from Mr. Alexander Robinson, Mr. R. B. Paterson, and from Mr. Charles Hunting.

The Examinations.

Letters read from Professor Spooner, Dr. Taylor, and Dr. Dunsmure.

Letter from Professor McCall, principal of the Glasgow Veterinary College, giving the following notice of motion :—

"1. That on May 1st, and in future, the examination of the students who have been educated at the Glasgow Veterinary College for the diploma of the Royal College of Veterinary Surgeons, shall take place in Glasgow.

"2. That the Council instruct the Sectional Court of Examiners in Scotland to examine the said students in Glasgow accordingly."

The notice of motion not having been received in time for insertion on the agenda for that evening's meeting, the consideration of the same was postponed till the following quarterly meeting.

A letter from Mr. McCall in support of his notice of motion was read.

The President.—The next business is to fix the days for the Scotch examinations. There are forty-nine pupils altogether.

Professor Spooner.—There ought to be a request that, inasmuch as it appears that there are forty-nine pupils, it is hoped, on the part of the Council, that not more than four nights will be occupied in the examination of those forty-nine pupils.

Mr. Hunt.—We ought to discuss the reply to Professor McCall first, because we have calculated that the whole of the students will go to Edinburgh.

The President.—I think Professor McCall does not ask for these students to be examined in Glasgow.

Professor Spooner.—I think he means that the pupils of the present term, at the forthcoming examination, should be examined in Glasgow. I am of opinion it would be hasty and imprudent legislation on the part of this Council to come to the determination to alter it now.

The President.—I wrote to Mr. McCall to ask whether he intended it to be the examinations after May, 1870, as the Scotch examinations were fixed for the 18th of April, but I have not yet received a reply.

Professor Spooner.—I should say that the examinations should continue as they have heretofore done; and although it may be true, as Mr. McCall argues, that such an alteration may not involve the necessity of altering our by-laws,

yet, on the other hand, such an alteration in the conducting of the examinations could not be effected without giving rise to a very considerable amount of increase of expenditure on the part of the Court of Examiners, which the College would have to sustain. I say nothing as to what is advisable to adopt hereafter, I am speaking as regards the present time. I think it would be very premature and injudicious legislation on our part to alter the forthcoming examinations.

Mr. Hunt.—I quite agree with Professor Spooner that it would be hasty in us to endeavour to make the alteration this year. I think Professor McCall should be replied to, stating that the Scotch examinations are appointed for the 18th of April, and that there is not sufficient time to organize the matter this year. The Council are quite disposed to give a favorable consideration to his application for another period, but this year he must be requested to do as he has done before.

Mr. Fleming.—It would be too late to begin to discuss the moving of the Examining Board from Edinburgh to Glasgow to examine the students of the Glasgow school. At the same time I must confess Professor McCall has stated his views fairly and justly, and I think he ought to be informed that the Council, without giving an opinion either one way or the other, is quite open to discuss the matter, and to take a favorable view of it.

Mr. Ernes.—This matter does not properly come before us now. I do not think we can discuss a matter of this importance, which is not on the agenda, and therefore I contend that the matter, being too late, does not fairly come before the Council, and that at a future meeting it may be taken into consideration. I quite agree there is very great reason why we should comply with the request, but at the present time I do not think we ought, because the letter has not come in time.

Professor Spooner.—We had better say the application has not come in time, but that the Council, at a future period, will be very happy to give it consideration.

The Council then resolved, "That the examination for Scotland shall take place on the 18th of April and following days, and that, inasmuch as it appears that there are forty-nine pupils to be examined, it is the wish of the Council that they shall not occupy more than four nights."

With reference to the London examinations it was resolved, "That the examinations shall occupy a period in accordance with the convenience of the Court, commencing from the 19th and extending up to the 30th, inclusive."

The Highland Society.

Mr. Ernes called attention to the proceedings of the Highland Society in still holding examinations and granting diplomas. He said it was very astonishing that the society, which numbered within its ranks many of our law-makers, should still be a law-breaker. He held that the charter granted under her Majesty's sign manual was as much the law of the land as any law made in Parliament. That charter distinctly said that no diploma could be granted except by that Board. He thought some representation should be made to the Highland Society on the subject.

Professor Simonds.—I do not think it will have much effect.

Professor Spooner entirely concurred in the remarks made by Mr. Ernes.

The President said that one time last year it was finally decided that the Highland Board should be discontinued. That was an understanding between the Council of the Highland Society and the Trustees of the Edinburgh Veterinary College. Under the circumstances it would be as well not to interfere in the matter at present.

Mr. Ernes did not think the Council should consider Miss Dick, nor even Professor Williams. He moved that a letter be addressed to the President of the Society on the subject.

The motion, not being seconded, fell to the ground.

A request from Mr. Edward Nettleship to take a plaster cast and drawing of some specimens in the Museum was acceded to.

Read:—The Registrar's report of deaths since the last meeting of Council.

The correspondence on the transfer of the College funds into the name of a fresh trustee.

The report of the Finance Committee.

The Treasurer's Quarterly Balance Sheet.

On the motion of *Mr. Cartledge,* seconded by *Mr. Cartwright,* the report was adopted.

Authority was given to sign cheques for current expenses and the examiners' fees.

Annual Report.

The President said the next business was the appointment of a committee to prepare the annual report.

Mr. Ernes said, with respect to this committee, he must throw himself on the mercy of the Council, and beg to be excused any further service thereon. For the last twenty-

five years he had been on that committee, and he thought they should now appoint a younger man.

Mr. Fleming said he had served on this committee for two years, and no one who had his work overhauled as it was overhauled at the special meetings, would desire to serve on that committee for a very long period. He, therefore, respectfully declined to have anything to do with it this year. Why not have those reports drawn up as they were drawn up in other societies, by the secretary? They could then be brought before the Council and modified to suit their views.

Professor Simonds thought it should be left to the Secretary exclusively.

Mr. Ernes said the suggestion was a very good one; there really was very little to be reported. They did not want an oration, but a simple statement of what had been done.

Professor Simonds suggested that the report should be headed, "Report of the Royal College of Veterinary Surgeons for the year ending" so and so, and not as heretofore, "Abstract of the Proceedings."

Mr. Morgan said he would second Mr. Fleming's proposition, that the Secretary alone draw up the report, and lay it before the Council at the special meeting.

The motion was put to the Council and agreed to.

The 25th instant was fixed for the special meeting.

On the motion of *Mr. Cartledge*, seconded by *Mr. Cartwright*, Mr. Richard Skelton and Mr. Cox were appointed auditors, or, in the event of one of those gentlemen failing, Mr. Helmore.

The Secretary read a letter addressed by the President to Professors Spooner, Williams, and McCall, dated February 15th, 1870, submitting for their consideration the report of the Examination Inquiry Committee. He stated that replies had been received from Professor Spooner and Professor Williams.

The report from the Deputation Committee was read.

Professor Simonds said the report would have to be discussed clause by clause, and he very much questioned whether the recommendations it contained could be carried out. The Governors of the Royal Veterinary College, he thought, would object to sign anything pledging themselves to carry out the suggestions with regard to the preliminary examination, they having for some years, perfectly independent of the Council, adopted a preliminary examination of each person desirous of becoming a pupil.

The President said it had been laid before the Trustees and Professors of the Edinburgh and Glasgow Colleges, and they saw no objection to it, and were willing to be bound by it.

Mr. Cartledge said it was too important a document to be dealt with as a whole; they ought to deal with it clause by clause.

The President said it was not the first time it had been before the Council.

Mr. Cartledge said it was the first time that the matter had been put in this tangible form.

Mr. Withers.—The whole scheme has been discussed.

Mr. Cartledge.—It has never been put into shape until now, I presume?

Mr. Withers.—No. When do you propose to go before the Governors?

The President.—On Tuesday next.

Professor Simonds.—It strikes me the safest thing to do would be just to receive the report, and leave the matter in the hands of the deputation, as they have made an appointment with the Governors of the Royal Veterinary College. We shall have received a report, that is all. This course will leave us free to act.

Mr. Cartledge.—If it be received by the Governors of the College, is it then supposed to have been adopted by this Council?

Professor Simonds.—Not at all.

Mr. Cartledge.—I am satisfied to receive it, but certainly not to adopt it. I move that it should be received.

Mr. Moon seconded the motion, which was adopted.

Mr. Cartledge.—I now move that the deputation be empowered to have an interview with the Governors of the Royal Veterinary College as arranged, and report the result to this Council at the next quarterly meeting.

Mr. Moon seconded the motion, which was adopted.

Tuesday, April 12th, at one o'clock, was fixed for the deputation.

A letter, dated 13th of March, from Mr. Burrell, on the subject of Lord Enfield's Jury Bill, was read. The writer desired to know what steps had been taken with the view of procuring the required exemption to the Royal College of Veterinary Surgeons.

A second letter had been received from Mr. Burrell that morning, stating that the Bill would be read a second time that day, suggesting that the deputation should wait upon Lord Enfield on the subject.

The Secretary was authorised to see the Parliamentary agent, and consult him on the matter.

The meeting was then adjourned.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

This Society held its eighth annual meeting at the Trevelyan Hotel, Manchester, on Wednesday evening, the 16th of March, at five o'clock.

Present—The President, G. Morgan, Esq., of Liverpool; Mr. T. Greaves, Manchester; P. Taylor, Manchester; A. L. Gibson, Manchester; Mr. Field, Manchester; T. Taylor, Manchester; A. Lawson, Bolton; W. Lawson, Woolton; J. Taylor, Oldham; A. Challinor, Bolton; W. Whittle, Worsley; W. Woods, Wigan; W. Dobie, Birkenhead; G. Hayes, Liverpool; Walley, Liverpool; Anderson, Manchester; T. Greaves, Jun., Manchester; Bostock, Altringham; and the Secretary.

The minutes of the previous meeting were read and passed.

Mr. A. Lawson then proposed his nephew, Mr. J. Lawson, of Manchester, as a member of the Association; the proposition was seconded by *Mr. P. Taylor*, and carried unanimously.

Mr. T. Greaves next proposed Mr. Bostock; *Mr. J. Taylor* seconded the proposal, which was carried.

The President then read his inaugural address, which contained many points of interest to the profession, and was listened to with marked and earnest attention.

The address of condolence to Mrs. J. Lawson and family, beautifully engrossed and appropriately framed, was shown to the members, and much admired for the neat manner in which it was executed.

Afterwards, the evening was spent in the relation of peculiar cases that had come under the notice of the various members present. Mr. Howell described a case of inflammation of the uterus, which provoked a good deal of discussion. Mr. Woods next related the case of a cow that did not calve at the time she should have done; fifteen months afterwards she was killed fat, and a perfectly formed calf was found in the uterus dried up. Mr. Morgan related several cases of inversion of the uterus, and a good deal of discussion took place on the best means of dealing with these unpleasant cases. Mr. T. Taylor next brought forward two cases of twisted uterus; Mr. A. Lawson following with a case of diseased bones of the hock of a horse, exhibiting the specimen, which was carious to a great extent, and had been the subject of a good deal of difference of opinion during lifetime. Mr. Howell related a case of lameness in the hock of a horse upon which he performed neurotomy with a successful result, the animal having worked sound for the last seven years.

The meeting then terminated.

W. J. Challinor,
Hon. Sec.

Address to the Members of the Lancashire Veterinary Medical Association, delivered at Manchester, March 16th, 1870, by the President, GEORGE MORGAN, M.R.C.V.S., *Liverpool.*

Gentlemen,—My first duty is to thank the members of this Association for the high honour they have conferred upon me in electing me to preside over them for the ensuing year.

In doing so, I find it difficult to express my feelings in words, as the pride and pleasure which naturally inspires the breast of any properly constituted individual on the attainment of so distinguished an honour are, in my case, damped and repressed by serious misgivings as to my fitness to discharge the important duties devolving upon me in the manner they ought to be discharged, or, I may add, in the manner they have been discharged by my distinguished predecessors; however, this I will say, that the good of the profession I have at heart, and assured as I am of your warm support, I return you my sincere thanks.

On assuming this chair I cannot but refer, and that with the deepest feelings of mourning and respect, to one whose great career on this earth is now closed; he was the first president of this Association, and I need not recall to your minds the great and untiring zeal he displayed in the discharge of his duties.

But where now is his great mind, that clear judgment, that penetrating intellect, that skilful hand, that warm heart overflowing with the milk of human kindness? Alas, the silver cord is loosed, and the wheel is broken at the cistern; the light of his open intelligent countenance will never again beam upon us, or his voice of wisdom be heard in our midst; but his memory we can cherish, and endeavour to follow in his footsteps; and if we all resembled our departed friend the reproach of indifference to the highest duties of our existence, which is often cast against the profession, would be heard no longer.

I shall not further indulge in such mournful reflections, but surely it is a good and a wise thing sometimes to school the heart by thinking on the virtues of the great and good who trod the path of life before us, and the most sincere tribute we can pay to their memory is imitation of their example.

In briefly addressing you on this occasion, I shall not attempt to drag you through the past history of the profession; that has already been so ably done by my predecessors that it would be presumptuous for me to occupy your time by further alluding to it, except incidentally, and in connection with the present, which is the only time we can call ours.

Well, what is the present state of the profession? In many ways much the same as it was fifty years ago. At that time there were many men in the profession, gentlemen who knew their business, and were respected and esteemed by all who knew them; while at the same time there were men who possessed the same title to practise the veterinary art, rude, ignorant boors, whose edu-

cation both mentally and morally, had been entirely neglected; men who only cared for a diploma that it might serve as a cloak for their ignorance, and enable them to practise their nostrums more successfully on the gullible natives; men whose only motto seems to have been, "Get money, aye, get money still, let virtue follow if she will." And, gentlemen, notwithstanding all our boasted progress, and the possession of a charter of incorporation for the last quarter of a century, we have a good many, far too many, of the latter class in our midst still.

One could almost have thought that a profession possessing the power of improving itself would have exercised it before this time, and made some advance on the highway of reform; but, unfortunately for us as a profession, we have most of the time been either buried in helpless lethargy or in a state of civil war, kingdom against kingdom, school against school, and man against man; a state of things under which neither nations nor professions can progress or prosper.

But thanks to our veterinary medical associations, they have altered much of this; they have been the means of healing much of the dissension that existed amongst us, and taught us to lay aside our private piques and quarrels, and join hand in hand and shoulder to shoulder in the great work that now lies before us—the reformation and advancement of the profession. And here I must award my meed of praise to one man in particular for the untiring energy and indomitable perseverance he has displayed in the establishment of these associations. No road is too long to travel, nor any labour too heavy a burden for him if, by the performance of either one or the other, he thought he could add one atom to the success of these societies. Need I say that I allude to our friend Greaves, one of the former presidents of this Society, and now the President of the Royal College of Veterinary Surgeons, an honour he has worthily earned, and the duties of which he ably fulfils? He is emphatically the "right man in the right place," as a proof of which I may state that during his year of office we have commenced the journey of reform: in future no person will be admitted as a student to either of the teaching schools until he has first undergone a preliminary examination as to the amount of general education he possesses.

The test will not at first be a severe one, but the adoption of the principle is a great deal. Some say it is so simple that it will do no good; but I feel assured that the name alone of a preliminary examination would be enough to exert a stimulus to the mind of any young man whose thoughts were turned to the veterinary profession as a means of making a livelihood.

Such an examination has been adopted for some years past at one or two of the colleges, and with the best results; but the examination has been by the teachers, who might be excused if they occasionally allowed some to pass who were not altogether well up; for this reason rejecting a candidate was just rejecting so much money, and let one despise money as much as one will, still we must acknowledge it to be a pleasant companion, and that

others beside Scotchmen are fond o' siller. In order to prevent any mercenary motive from influencing the judgment of the examiner, it is now proposed, and I may say agreed to, that the examination shall be conducted by an independent Board entirely unconnected with any of the schools, and whose verdict shall be final for twelve months; that is, the candidate for entrance rejected at the board of one college shall not be eligible to go before the examining board of any other college, or enter as a pupil till after the expiration of twelve months.

The examination will consist simply of matters which every person ought to know, whether they are intended for the veterinary profession or not, so that no hardship will be imposed on those who apply for admission to our ranks as recruits,—reading, writing, English grammar, and arithmetic; a very simple affair no doubt many of you think, and wonder why it was not adopted long ago. But simple and insignificant as it may appear it has taken twenty-five years to accomplish, and we ought to congratulate ourselves on its accomplishment, knowing well that unless we keep advancing step by step, by regular or irregular intervals, we can never reach the end of our journey or the pedestal of perfection.

With the studies of the pupil in the colleges we have no right to interfere; neither do we wish to do so if proper teachers are appointed, and proper means adopted to enforce the fulfilment of their respective duties. Of late murmurs have been heard, not loud but deep.

While on the subject of education let me say that I fully agree —not simply in matters relating to the profession—with those who say that we want enlarged education; having felt the want personally I can speak from experience, and hope and pray that the future generations of Veterinary Surgeons may be better educated than some of their forefathers have been—not simply in that which constitutes the gentleman, but a happy combination of the two, to form at once the gentleman and the practical veterinary surgeon, to teach him to read, to reason, to think, to practice.

It is absurd to expect a man to reason correctly if he has not been taught the use of reason; it is eqnally absurd to speak of a man as being thoroughly acquainted with his profession, and, as his diploma states, "fully qualified to practise the art and science of veterinary surgery and medicine," while at the same time he knows not the rudiments of practice, and it may yet become a fair question for the consideration of these societies, whether or not it would be advisable to establish special schools for the preparation of young men preparatory to their attendance at college.

This leads me naturally to speak of the next great step in the advancement of the profession — the practical examination. The Council, to whom all matters relating to the examination of the pupil belong, have resolved that in future no pupil shall be admitted to the ranks of the profession until he has undergone a practical examination, and satisfied the examiners that he is what he professes to be, fully qualified to practise.

True, this resolution has met and still meets with a certain amount of opposition from certain quarters, whence many would not have expected it, seeing that bye-law 29 distinctly states that students shall undergo an examination as to their knowledge of the practical duties of the profession.

This bye-law has been in existence for many years, and was well known to the teachers at the various schools. The Council by putting it in force are only doing their duty, and ought to be supported by the general body of the profession, and not pooh-poohed, and attempts made to render them ridiculous.

Time was when opposition from this quarter would have been formidable; even yet it can scarcely be despised. But the days of the opponents of veterinary progress are numbered. The obstructives of reform are nearly bowled out; they have had a long innings, but the ball of reform has been set a rolling, and let them beware how they attempt to stop its motion.

I have many times been asked by veterinary surgeons why we do not at these associations agitate for a veterinary bill to stop quackery, and protect the rights of the veterinary surgeon. For an answer, I may refer them to one of the leaders in this month's *Veterinarian*, where the writer distinctly states that our province is science not politics, and that no two things on earth are so hopelessly irreconcilable as science and politics. Now without either admitting or denying the truth of this proposition, I think there are times when our associations ought to exert themselves and make their power felt; as, for instance, in the passing of the Contagious Diseases Act last session. Surely the Government never intended when they passed that act to rob a body of men to whom Her Majesty had granted a charter of incorporation of that to which they were the just and lawful heirs, and the only competent parties to fulfil the duties. Yet such has been the operation of the Act. We find all over the country that policemen have been appointed inspectors, and are expected without any previous training whatever, to diagnose correctly such diseases as glanders and farcy in the horse; pleuro-pneumonia and rinderpest in cattle; variola ovina in sheep; and measles in swine. And it would not at all surprise me to find those wiseacres of magistrates who have appointed those men, when they get too old for their additional duties of vagrant running and thief catching, to recommend them as skilled in the diseases of horses and cattle, and help them to commence practice as veterinary surgeons.

Now I do think it is within the province of these associations to notice such matters as these, and earnestly unite in a solemn protest against this state of affairs, and endeavour to have them placed on a more satisfactory basis, the emolument arising from these inspectorships, may not in many cases be large and the duties considerable, but whether they are large or small they are ours by right, and we ought not to rest satisfied until we obtain them; and if the ravages of contagious disease are ever to be curbed, the act must be amended, so that one, two, or three veterinary surgeons pro-

perly qualified shall be appointed for each county, at a stated salary, directly responsible only to the veterinary department of the Privy Council, from whom he shall receive his instructions, and who alone shall have the power of cancelling his appointment; in short, a position similar to a medical officer of health.

I must confess that I have little faith in the reform of our profession by legislative enactments, or that they will ever bestow upon us exclusive privileges to protect us from the competition of quackery outside the profession of which many complain; and even if they did, we should still have it practised by legalised members, for if we come to examine the matter closely we shall find that we have a natural attachment to quackery; it is therefore difficult of eradication, because the principle of undoubting belief is in proportion to the subject of our confidence; thus in many difficult cases we succeed simply through confidence, and fail in the attainment of easy ones simply because we despond.

But we should never forget that the true elements of reform are not corporate but personal, and that if as a body we would be purified we must adopt a high standard of individual character and conduct, and whatever delays may attend the introduction of legislative reform, there is a power entrusted to each of us of internal reformation, of a sound and healthy training of the moral and intellectual faculties—of diligence in the pursuit of science—of modesty in the self-estimation of attainments—of moderation in all desires for mere applause or emolument, of a refusal to stoop to actions selfish or degrading—of rightly estimating the holy luxury of acting on the golden precept of doing to others as you wish they should do to you, a power far more important than the best regulated act of parliament could confer upon us, and one which if we practised it in our individual and collective capacity, would raise us to such a height that quackery and its minions would shrink into pigmy insignificance.

Let me, therefore, give you one word of advice with regard to these associations; cherish them as the proper vehicle for the development of these principles, as the means of bringing our thoughts as well as our bodies into communion, of engendering mutual feelings of respect and esteem among men who are travelling the same road of life together.

In the exercise of our profession misunderstandings occasionally arise, and we feel ourselves aggrieved by the action of some professional brother, but we should not fly the sight of him, and abstain from attending the meetings of the association on that account, as a little calm consideration of the facts will often be found sufficient to explain and exonerate.

Now how is it that on many occasions we find so small an attendance at these meetings? let us in charity believe that it is in a great measure attributable to professional engagements, for we can scarcely believe that the important advantages to be derived from attending these meetings are still unappreciated by the members; we want their presence as well as their names and subscriptions, and

it surely needs little argument to prove that a couple of hours given to the discussion of important subjects is far more profitable than double the time spent in solitary reading and reflection.

Discussion and opinion are the steel and flint by the mutual contact of which darkness is dispelled, and the light of truth obtained and diffused. In our discussions we care not for victory; our aim is improvement, and if truth have a real existence then these contradictory views must in all cases be associated with error. Our duty is therefore to weigh these views in the accurate balance of reason and experience in order to improve our knowledge, for it is knowledge alone that will enable us to fulfil successfully our rightful mission, that of properly diagnosing, and remedying the maladies of a race to which the Divine Creator in His wisdom has denied the powers of reason and of speech.

For the attainment of these objects, these associations are admirably adapted, and I earnestly hope they will ever be supported by the enlightened influence of the wise and good.

Much good has already resulted from them; to repeat which here would be like "a thrice-told tale, vexing the ear of a drowsy man." But great as the results have been, greater are yet in store; the work is not yet half accomplished. Let me remind you again, that the good that shall accrue and the future standing of these associations before the world will depend entirely on individual effort and the sacrifices each is willing to make.

"Honest labour ennobles man." A great and responsible duty devolves upon us not only to uphold the present structure, but to enlarge and build on the foundation already laid. To this end duty to ourselves, to each other and to the world, demands a determined and united effort.

Oh for the tongue of eloquence suited to inspire and implant in your bosoms an impulse to action; rich in good fruit as these institutions have already been,—let but the fiat go forth for a still more abundant harvest,—let each cast his mite into the treasury of knowledge,—let those gifted with the talent for scientific research make known the result of their investigations,—let the practical man; the man of acute observation and reasoning powers; the chemist; the anatomist; the pathologist; the microscopist; yea, let all existing talent be exercised, and the result of the labours of each investigator recorded, and these associations will yield a harvest of fruits to future ages a hundredfold.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

At the usual quarterly meeting of the Yorkshire Veterinary Medical Society, held April 21st, Mr. Fearnley's proposition, to the effect "that £10 per annum from this Society's funds be allowed to Mr. Dray, as part payment of his expenses in the event of his

being elected a member of the Council," having been submitted, Mr. Dray rose and said that it was not his intention to accept any emolument from the funds of the Society.

The motion was consequently withdrawn, and the meeting proceeded with the remaining business.

[We have been requested to give insertion to the above, pending the publication of the ordinary proceedings of the Society.—Eds.]

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

The fifteenth meeting of the Association was held at the Lion Hotel, Nottingham, on Tuesday, March 29th, 1870.

There were present—Mr. Carless, President; T. Greaves, Esq., President of the Royal College of Veterinary Surgeons; and Messrs. H. King, W. Garrard, R. Reynolds, H. Pyatt, T. Cave, C. Taylor, Ed. Baily, Sen., G. Poyser, H. J. Cartwright, G. Rossell, H. Flower, W. G. Cox, W. P. Toll, A. Proctor, and the Secretary; also, as visitors, Mr. Peter Taylor (Manchester) and Mr. Garrard, Jun.

The minutes of the last meeting at Derby were read and approved.

The Treasurer produced his financial statement, which was considered highly satisfactory.

It was agreed to hold the next meeting at Burton-on-Trent, during the month of July.

Mr. Henry Pyatt, of Nottingham, was unanimously elected President for the ensuing year.

It was proposed by *Mr. Reynolds*, and seconded by *Mr. Cartwright*, that Mr. Carless be elected a Vice-President.—Carried.

Proposed by *Mr. Garrard*, and seconded by *Mr. King*, that Mr. Rossell be a Vice-President.—Carried.

Proposed by *Mr. Cartwright*, and seconded by *Mr. Bailey*, that Mr. Garrard be a Vice-President.—Carried.

Mr. Proctor was re-elected Treasurer.

Mr. Barry was re-elected Honorary Secretary.

Mr. King gave notice that at the next meeting he would bring a motion to expunge the portion of Rule XI relating to fines.

A letter was read from the Secretary of the Yorkshire Veterinary Medical Society, containing a resolution passed by that Society, and requesting that it might be laid before the meeting. The resolution was as follows:

"That it is the opinion of this Society that the Veterinary Medical Societies in the United Kingdom are of sufficient importance to be represented in Council; and further, this Society is of opinion, that if each Society in the United Kingdom would send one of its members to represent its views in Council, the profession would be

more thoroughly represented, and thereby the Council so constituted, would be better able to bring about the desired changes which are so much needed, and which are so essential, before our profession can claim that status in society which, as one of the liberal professions, it has a right to expect."

The meeting approved the spirit of the resolution; but it was pointed out by Mr. Greaves that no direct representation of the Association could be legally carried out. It was ultimately resolved that the Secretary be directed to request each member of the Association to attend the next annual meeting of the Royal College of Veterinary Surgeons, and to support with his vote such person as may hereafter be agreed upon as a member of Council.

Mr. T. Cave proposed, and *Mr. H. J. Cartwright* seconded, a resolution that a sum of money from the funds of this Association be handed over as a donation to the Veterinary Benevolent Fund.—Carried.

Mr. Reynolds proposed that the sum of £30 be given; *Mr. Garrard* seconded the proposition.—Carried unanimously.

Mr. George Cowlishaw, of Derby, was unanimously elected a member.

Mr. Poyser, of Ashbourne, read a portion of an essay on "Pleuro-pneumonia in Cattle," but owing to the lateness of the hour was unable to complete it, and it was agreed that the reading should be finished and the essay discussed at the next meeting.

A vote of thanks was given to the President, and the proceedings terminated.

William Barry,
Hon. Secretary.

NORTH OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

In accordance with the resolution passed at the meeting held on the 22nd of July last, for the further discussion of "Quarter-ill," a special meeting was appointed to be held at Huntly, on the 16th of October. The inclemency of the weather prevented a sufficient number of members attending, in consequence of which it was resolved to adjourn, and take up the subject at the annual meeting in Aberdeen.

The second annual meeting took place in the Mechanics' Hall Buildings, on the 15th of January.

The Treasurer submitted his annual statement, which showed a favorable balance at the credit of the Association, and the following office-bearers were appointed, viz.—Mr. Dewar, Midmar, President; Cassie, New Machar, Vice-President; Thomson, Aberdeen, Treasurer; and Taylor, Aberdeen, Secretary.

The discussion on "Quarter-ill" being resumed, considerable

diversity of opinion was expressed in reference to the nature and predisposing causes of the disease. The conclusions arrived at were that treatment generally failed, and that a change of food, insertion of setons in the dewlap, and exhibition of saline medicines, were the means approved of for the prevention of the disease.

Mr. Thomas Mellis, V.S., Inverurie, read a paper on "Veterinary Obstetrics," having reference more particularly to the mechanical appliances for effecting delivery in difficult parturition, which elicited some very practical remarks.

After three hours of lively discussion, the members adjourned to Reid's Royal Restaurant, where they partook of an excellent dinner, and spent a very pleasant hour in social conversation.

James B. Taylor,
Secretary.

NEW MEMBERS OF THE PROFESSION.

At the several meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held on April 19th, 20th, 21st, 22nd, 26th, and 27th, the following students at the Royal Veterinary College, London, received the diploma of the College and were admitted members of the profession.

April 19th.

Mr. Frederick William Plumbly	Southrepps, Norfolk.
— John Kenny	Liverpool.
— Charles Phillips	Woolwich.
— Charles Rugg	Meopham, Kent.
— James Augustus Woods	Cavalry Depôt, Canterbury.
— John Ford	Bishop Auckland, Durham.
— Charles Allen	Dublin.
— Charles Lawrence	Romford.

April 20th.

Mr. Samuel Lomas	Stockport.
— Robert Cadwallader Trigger	Wolverhampton.
— Harry Olver	Truro.
— Thomas Edward Auger	Walpole, Suffolk.
— John William Evans	London.
— William Sheaf	Worcester.
— William Augustus Taylor	Manchester.
— Lawrence Henry Coster	Teignmouth.

April 21st.

Mr. Alfred Holmes	Hemswell, Lincolnshire.
— William Sewell	London.
— Albert Edward Catt	Tenterden, Kent.
— Francis Thomas Earl	Northamptonshire.

Mr. Frank Garratt . . . Northampton.
— William Thomas Sabin . Oxford.
— William Sheppard . . Exeter.
— Sydney Smith . . . Rolvenden, Kent.
— Frederick Armstrong Kirke . Grimsby.
— Joseph Mackinder . . Peterborough.

April 22nd.

Mr. Henry Gurney Lepper . . Aylesbury.
— Alfred Edwin Buzzard . . Market Deeping, Lincolnshire.
— Henry Margetts Stanley . Birmingham.
— Thomas Elliott . . . Middlesborough-on-Tees.
— John Yates . . . . Blackburn.
— Samuel William Leggett . Charsfield, Suffolk.
— John Marriott . . . Car-Colstone, Notts.

April 26th.

Mr. Alfred Ernest Queripel . . Les Meriennes, Guernsey.
— James Webb . . . Hockerell, Herts.
— Robert Francis Frost . . Six Mile Bridge, Co. Clare.
— Charles Lovegrove . . Leighton, Essex.
— Benjamin Lucas Glover . . Upper Rathmines, Co. Dublin.
— Charles William Griffis . . Puddletrenthid, Dorset.
— Charles John Grey . . Beeston, Notts.
— Samuel Gill . . . Torquay.

April 27th.

Mr. William Day . . . Woodyates, Salisbury.
— Herbert Howell . . . Clifton, Bristol.
— Baptist Kemp . . . Market Deeping.
— John Price . . . . Brecon, South Wales.

At the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Edinburgh, on April 18th, 19th, and 20th, the following students of the Edinburgh and Glasgow Colleges passed their examination, and received the diploma of the College.

April 18th.

Mr. Robert Stewart . . . Morpeth.
— David King . . . Paisley, Renfrewshire.
— James Findlay . . . Glasgow.
— Adam Hay . . . Kirkintilloch, Dumbartonshire,
— Peter Stalker Cowan . . Bannockburn, Stirlingshire.
— James Tennent . . . Stewarton, Ayrshire.
— Edward Woolner . . . Heywood, Manchester.
— Thomas Edgar . . . Dunlop, Ayrshire.
— William Ironside . . . Aberchirder.
— William Henry Going . . Mullinahone, Co. Tipperary.

April 19*th.*

Mr. James Gason Going	Mullinahone, Co. Tipperary.
— Hugh Ferguson	Bolton.
— Tedbar Hopkin	Manchester.
— James Irving	Rochdale.
— James Edward Scriven	Aberford, Yorkshire.
— William Dorber	Manchester.
— John Sayer	Wigan.
— Aaron Sisson	Torpenhow, Cumberland.
— James Anderson	Forfar.
— William Patterson	Montreal, Canada.
— William Russell	Falkirk.
— Henry Barnes	Tarporley.
— George Durrand	Wick, Caithness.
— Moodie John Roberts	Ackworth, Yorkshire.
— Piers Joseph Brady	Meath, Ireland.
— Archibald Stevenson Jones	Enniscorthy.
— John Hepton	Sherburn, Yorkshire.
— Francis Robertson	Otago, New Zealand.
— Thomas Runciman	Haddington.

April 20*th.*

Mr. James Watson	Douglas.
— George Gray	Keilyford, Aberdeenshire.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF COMMONS, *April* 8*th.*

FOREIGN CATTLE MARKET.

ON the motion for going into committee of supply,

Mr. SAMUDA, supported by Sir H. S. IBBETSON, called attention to the question of a site for the contemplated waterside market for foreign cattle, and urged on the Government the desirability of giving its sanction only to such site as shall be sufficiently extensive to provide for the reception of animals during periods when several foreign countries may be declared infected, where the means of insulation can be effectually secured, and the convenience of the trade and of the public best consulted.

Mr. FORSTER observed that the Act of Parliament did not intend to place on Ministers the responsibility of choosing a site, but that they should give their veto upon any site which did not fulfil its requirements. It was the City of London which had to make and to pay for the market, and that being the case it was no more than fair that the City should be allowed to choose, and then to take the opinion of the Privy Council on the particular spot they had de-

cided upon. The Markets Committee had not yet made their report. They had various sites before them; and he thought that, with the Corporation on one side, and the Government on the other, a real *bona fide* market would eventually be made, for he did not believe that the City authorities would propose a site of which the Privy Council could not approve. At all events, the Government were determined that it should not be their fault if the site chosen were not a good one.

A short discussion ensued, in which Mr. LOCKE, Mr. C. S. READ, and Mr. A. JOHNSTON took part. The main staple of the argument seemed to be the comparative merits of the Essex and the Surrey shores for the proposed market.

The subject then dropped.

Veterinary Jurisprudence.

CONTAGIOUS DISEASES (ANIMALS) ACT.—SCAB IN SHEEP.

BLETSOE. PETTY SESSIONS, *March 29th.*

Present—The Right Hon. Lord St. John, Chairman; the Hon. St. Andrew St. John; the Rev. C. C. Beaty-Pownall and J. Tucker; B. H. Starey, and S. G. Payne, Esqs.

Shadrach Brightman, farmer, of Little Staughton, was charged by Superintendent Carruthers with neglecting to give information to the police that his sheep were affected with the scab, at Little Staughton, on the 16th of March. Police-constable Sturgess said that in October last year the defendant saw him posting up a bill on his (defendant's) barn at Little Staughton, requiring all persons having diseased cattle upon their premises to give notice to the police. A day or two after he served a summons on the defendant for an offence under the Highway Act, and then told him there was a report that his sheep were affected with the scab, and that he ought to give notice to the police or the inspector. He had seen the defendant frequently since, and had posted another notice on premises adjacent to defendant's, stating that any person not giving notice to the police was liable to a penalty of £20. Witness was with the inspector on the 16th of March, when he examined the flock, and previous to that the defendant had not given any notice.

Mr. H. Crofts, the inspector, said that on the 16th of March he went and examined a flock of sixty sheep belonging to the defendant at Little Staughton, and found they were affected with the scab. The disease must have existed for a month or six weeks at the least. Defendant told him the sheep had been dressed for the scab.

In defence Mr. Brightman said he did not know that he should give notice. The police put a notice upon his barn, but he did not know what it was about. He had had his sheep dressed three times for the scab, but it took some time to get rid of it.

The noble Chairman told defendant he was liable to a penalty of £5 each for every sheep that was affected, but the magistrates would take a most lenient view of the case, and fine him in the mitigated penalty of £1 1s. and 11s. 6d. costs, adding that he ought to be very thankful that he was let off so easily.

Defendant paid the money, but said that he was not at all thankful.—*Bedford Times.*

ARMY VETERINARY SURGEONS PRACTISING PRIVATELY.

By "Enquirer."

Gentlemen,—Being ignorant of the terms of the warrant under which an army Veterinary Surgeon acts, I am induced to ask, if it is in accordance with the rules of the service for a gentleman who is in charge of the horses of any portion of his regiment to perform the offices of a private practitioner when it is detrimental to the latter? If it be legitimate it is, I think, unfair. An army man is on full pay, and has no struggle to make for his daily bread. A private veterinary surgeon is put to his wits' end to meet his daily requirements.

Perhaps you will kindly afford space for this query in your next, with a view of its falling under the notice of those competent to deal with the question? My experience and observation enable me to assert that the grievance I have alluded to is not universal.

PROFESSOR TUSON'S VETERINARY PHARMACOPŒIA.

We have much pleasure in announcing that this work has been so favorably regarded on the other side of the channel, that it is being translated into French by M. Riche, one of the professors at the *Ecole Supérieure de Pharmacie, Paris.*

OBITUARY.

We have to record the following deaths:

Mr. R. Brenning, M.R.C.V.S., Waterloo, Liverpool. Diploma dated April, 1842.

Mr. Edward Mulliner, M.R.C.V.S., Wrexham. Diploma dated April 30th, 1859.

Mr. James Bibby, M.R.C.V.S., Calne, Wilts. Diploma dated April 29th, 1862.

THE

VETERINARIAN.

VOL. XLIII. No. 510. JUNE, 1870. Fourth Series. No. 186.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from p.* 365.)

The Internal Elastic Structures of the Foot.—The very nature of the horse requires that he should possess, not only a strong resisting foot, which, to be so, must be a solid or undivided one, but that, in order to harmonise this solidity with the inherent swiftness and power of this animal, it should also be endowed with a special apparatus of great elasticity, in addition to those appliances already referred to, lodged within the hard horny box, to compensate for the rigidity of the other parts, and to render the organ more springy and resilient than that of any other animal, speaking comparatively with reference to size and position. A large portion of the foot, as we have seen, is composed of the dense resisting media by which the weight and strain is overcome; the remainder is made up of the tensile structures, judiciously disposed, which minister no less to speed and gracefulness of motion, than to the diminution of concussion and the protection of vital textures.

This complementary arrangement, which is for the most part situated behind the organ, fills up the space left within the hoof by the bones, tendons, and ligaments just specified, and consists of plates of cartilage of varying thickness, very tough and supple, with fibrous pads or cushions, and membranes, isolated or combined, placed wherever they are likely to be required. These constituents of the apparatus

spring from, are attached to, and mainly rely for their integrity upon, the os pedis, around whose upper margin, and on or between the wings of which they are principally situated, to a great extent making up the posterior aspect of the foot, and forming no inconsiderable feature on its front and sides, where they constitute nearly the whole of the coronet. Though in reality but one, by reason of their apparent continuity and similarity of function, yet because of their dissimilar organization and disposition, we will divide them into three portions—the *elastic cartilages, coronary cushion,* and *plantar cushion,* by which designations they will, perhaps, be easier recognised and described.

The Lateral Cartilages of the Foot (figs. 7, *m;* 8, *o;* 9, *ff*).—From among the many names which have at various times been given to these bodies, such as "scutiform appendices of the third phalanx," "fibro-cartilages of the third phalanx," "cartilaginous plates," "great cartilages of the foot," "great podal cartilages," "fibro-cartilaginous prolongations of the os pedis," &c., I select the above designation as at once simple and concise, if not absolutely exact, when referring to the lateral portions of the elastic apparatus of the foot.

The description of these parts ought, perhaps, to have been entered upon when speaking of the pedal bone, as they are apparently only prolongations of that phalanx; but I have purposely deferred noticing them until now, because of their forming a portion of the complex elastic arrangement of the foot which I thought most convenient to examine as a whole, forming, as it does, a wide and deep bed, surrounding by its constituent portions more or less of the foot in particular regions.

Rising almost perpendicularly from each side of the os pedis, to the basilar and retrossal processes of which they are attached, but more particularly the first, these cartilages, peculiar to solipeds, completely encircle its extended wings in the form of a *scuti* or shield, from each margin of the pyramidal process in front to beyond the retrossal processes posteriorly, beneath which they are reflected inwards towards each other. Each cartilage is a somewhat thin plate, in shape an oblique parallelogram, extending as high as the joint formed by the large and small pastern bones, and as far back as the point of the coronet; its outer surface (fig. 9, *m*), unevenly convex, can be felt for some distance above the hoof during life, and is pierced with numerous small slanting openings for the passage of vessels, more especially in its lower superficies; its inner face (fig. 8, *o*) is concave and adapts itself to the parts with which it comes in contact; in front, it is in close proximity to the fibrous capsule of the joint of the foot, and is, indeed,

attached to it by cellular tissue; behind, it offers its largest and most remarkable surface; above, on this face, it is channelled by a great number of sinuous grooves for the reception and support of a network of veins, and from the interspaces formed by these spring many small fibrous bands, which descend inwards to blend themselves with the plantar cushion; nearer the base of the inner aspect of the cartilage these bands increase in size and width, and lower still the tissue of the cartilage itself becomes inseparably continuous with that of this cushion. Thus it will be seen that the most intimate relations exist between the lateral cartilage and the plantar cushion: first, through the medium of slender bands arising from the fibrous tissue of the upper part of the former, then of larger bundles, and, finally, by complete incorporation of the two.

The borders of these cartilages offer some points of interest. The upper or coronary border (fig. 7, *n*) is thin, and a little convex, and constitutes its highest and most elastic part; on its inner face, near the posterior border, is a deep groove for the lodgment of the digital artery and vein, and within this is a small prominence into which is inserted the shortest branch of the navicular or lateral posterior ligament already described. The anterior border (fig. 9, *m*) passes obliquely downwards and backwards, thinned from its inner face, and forms an inseparable union with the anterior lateral ligament (fig, 7, *l*), by an intimate consolidation of their fibres; at its upper corner, above the ligament, it gives off a somewhat wide fibrous band that proceeds transversely above the expansion of the anterior tendon, to which it closely adheres, and joins its fellow of the opposite side, thus completing the union of the two cartilages in front of the foot. The posterior border (fig. 7, *o*) descends obliquely towards the heel, becoming gradually thicker, and meeting the inferior border, forms a prominent mass at that point which has been named the "cartilaginous bulb" (fig. 7, *p*). The inferior margin or base of the cartilage (fig. 7, *u*) contains imbedded in its substance the extremity of the wing of the pedal bone, and is reflected backwards and inwards towards the sole to become continuous with the lower surface of the plantar cushion.

The structure of these plates is essentially fibro-cartilaginous; that is, fibrous tissue mixed up with cartilage-cells. The proportions in which these exist, however, vary exceedingly in different parts of the plate, though this is everywhere extremely elastic. The cartilaginous element is most abundant on the outer convex face of the plate, where it does not

contract any adhesions, but the fibrous tissue gradually predominates as we approach the inner face, which forms such important and numerous relations with the adjacent textures. Towards the upper anterior portion the cartilage is most apparent, but where it becomes fused with the lateral ligament, at its lower border, and in its inner reflection towards the plantar cushion, it is almost entirely a strong fibrous membrane, which varies in thickness and density in different situations. At has been remarked, the presence of this fibrous tissue permits the strongest adhesions being contracted with all the neighbouring parts by the extension of the fibres, as powerful ligamentous bands, into their structure.

Where the cartilaginous element prevails—and which is indicated by its bluish-white colour, the presence of large cells, and an almost homogeneous matrix—the blood-vessels that nourish the plate are very few; but, on the contrary, where it is least abundant or entirely absent, as at the lower and posterior parts, it is most plentifully supplied.

The tendency of these cartilages to become more or less converted into bone is well known to the majority of horsemen; and though this transformation is generally the result of inflammation—acute or chronic—induced by external or internal agencies, yet I have met with traces of calcareous deposition in the lateral cartilages of horses that had not shown any symptoms of such a change taking place. Any portion of the plate may become the centre of this calcareous infiltration; there may even be several centres, or the whole plate may be invaded by minute deposits of bony matter; but as a rule, when not due to external injury, I have observed that the alteration begins at or near the fixation of the cartilage into the pedal bone (fig 7, *u*), and proceeds upwards; it would also appear to manifest itself first among the cells in the vicinity of the fibres that pass from the inner surface of each plate to join some of the textures at the posterior part of the foot, and even involves the origin of these fibres. I think it somewhat remarkable, however, that the fibres themselves, after leaving the plate, are but seldom, if ever, subjected to ossific change, which seems to be most frequent in those portions where the cartilage-cells are predominant. I do not remember meeting with any morbid specimens in which the reflections of the cartilages into the plantar cushion were affected, and these are chiefly fibrous.

In reference to this matter, and also in relation to the anatomy of the foot, it is well to note that in the posterior extremity the lateral cartilages are smaller and thinner than those of the fore foot, and also differ from them in texture

the fibrous element predominating greatly over the cartilaginous—a circumstance which renders them more vascular, and also, it would appear, less disposed to become the seat of bony deposition.

The Coronary Cushion.—I have given this name to an elastic structure that somewhat readily attracts the eye on the removal of the hoof from the foot, standing out, as it does, boldly from around the upper part of the organ, in the form of a thick rounded prominence, or cornice.

This body, like so many other parts of the horse's foot, has received a variety of names, more or less indicative of its function or physical characteristics: such as "cutidure" or "cutis-dura," from its relations with the skin of the pastern; "coronary ligament," from its ligamentous-like density; "coronary substance," an indefinite term; "coronary band," quite as indefinite; "matrix of the hoof," because of its being the chief secretory organ of the wall of the hoof; "bourrelet" by French, and "fleischkrone" by German veterinarians. Besides its function as the secretor of the hoof wall, which will be noticed hereafter, there can be no doubt whatever that it assumes a very prominent part in the elasticity of the foot.

Situated at the upper margin of the os pedis, the pyramidal process of which forms its highest point, and surrounding the joint resulting from the union of that bone and the second phalanx, this wide convex prolongation is most extensive in front, slightly contracts as it passes round towards the points of the heels, where it again assumes large dimensions in constituting an acute angle at the lower extremities or bulbs of the lateral cartilages; after which it rapidly diminishes, and finally disappears in its course along the concavity of each wing of the pedal bone. The space between the two angles of the heels is occupied by the thick bulbs of the cartilages, which here appear to be a continuation of this coronary cushion, so intimately are the component parts of the elastic apparatus of the foot eventually blended into one mass.

The body of this large protuberance is mainly composed of dense fibrous tissue, a modification of that which constitutes the substance of the true skin immediately above and in connection with it; in the meshes of this tissue, beneath the keratogeneous membrane, are large quantities of fat vesicles; the convex anterior, lateral, and posterior portions fit into a corresponding concavity excavated on the upper and inner border of the hoof wall.

The colour of the coronary cushion is usually of a bright red, owing to its great vascularity; though this is not unfrequently obscured, wholly or in patches, by the presence of

a dark-tinted pigment, when the adjoining skin is of a black colour.

We will have occasion, hereafter, to describe this cushion more carefully; I have only included it here because the share it takes among the elastic appurtenances of this organ has been very much overlooked, if not entirely neglected.

The Plantar Cushion (fig. 3, *q*).—The third elastic body we have now to glance at, and which has been named, from its position and principal function, the "plantar cushion," has been at various times designated the "internal," "fleshy," and "fatty frog," also the "pyramidal body."

It occupies nearly the whole of the large space included between the wings of the pedal bone and its lateral cartilages at the posterior part of the foot. In form it is somewhat polyhedral, though it really appears to be triangular or wedge-shaped, the base or widest part lying towards the heels, and the apex or thin end extending well towards the anterior margin of the plantar surface of the bone; thus covering in, and moulding itself, as it were, to the highly important articulations, tendons, and delicate membranes in this region of the limb, while in turn it is protected inferiorly on the ground surface by the horny frog, and posteriorly by the skin.

As will be seen in fig. 3, it rises as high as the middle of the posterior face of the small pastern bone, adapting itself to the angle formed by the flexor tendon in its passage over the navicular bone, and is interposed between the tendon and the horny frog to beyond the insertion of the former in the sole of the os pedis. So that it will be immediately perceived that one of its chief offices is to guard and support the tendon, especially at its weakest point—the bend over the navicular bone. This upper or anterior face is covered by a strong fibrous membrane—the "proper tunic"—which intimately adheres to it by means of fibres passing into its substance, at the same time that its superior surface contracts a slight adhesion to the accessory fibrous sheath of the tendon. The thick portion of the cushion is divided into two prominences, or "bulbs," by a longitudinal furrow, and here this enveloping fibrous membrane attaches itself more closely to the sheath through which the tendon plays, and accompanies it as high as the back of the fetlock. On each side of the cushion this tunic is bordered by a kind of thick pearly-white ligamentous band or hem, that divides into two portions at its upper extremity, the widest and thinnest of which runs upwards and backwards to the fetlock joint, where it meets its fellow of the opposite side, and both conjoin to maintain the small pellicle of yellow fibrous tissue on which rests the horny

growth or *ergot* of the fetlock against the perforatus tendon. The other branch ascends forwards, and, reaching as high as the small metacarpal or metatarsal bone, fixes itself on the little button or knob by which the extremity of that bone terminates. At the other or lower extremity these ligamentous bands pass obliquely forward, and are inserted into the wings of the foot bone. This arrangement of the fibrous covering of the plantar cushion is very curious and interesting, forming as it does a complementary ligamentous apparatus of much moment in connection with the elasticity of the foot.

At the sides, the plantar cushion is wider than the perforans tendon, and is limited by the inner faces of the lateral cartilages, to which it is closely attached by bands of fibres that pass through it from side to side, by prolongations from the cartilages themselves, which dip deeply into the structure of the cushion, and become incorporated with it, and, finally, by a real continuity of texture towards its lower border.

Its convex apex, inclining forwards, is firmly fixed into the sole of the os pedis, in advance of the tendon, with whose fibres it mixes; while the base or heels, directed backwards, is of great thickness, and divided inferiorly by a deep depression into two bulbous masses corresponding to the horny frog at this part, having a membranous covering between it and the skin of the pastern above and the secreting membrane of the horny frog below, and which might be termed the "inferior tunic" of the plantar cushion. This tunic is fixed on each side to the posterior border of the lateral cartilage, and joins, in front and above, the superior tunic, to become attached to the sheath of the flexor tendons.

On each side the cushion effects the most intimate relations, by means of fibrous attachments, with the lateral cartilages and wings of the pedal bone, and in this way becomes allied in function with the coronary cushion; while above and in front it is so related to the deep flexor tendon, even as high as the pastern joint, and to the movements of that tendon on the navicular bone, as to render it a powerful agent in ensuring the accomplishment of those resilient functions pertaining more particularly to the foot.

The lower face of the plantar cushion is that which has been commonly termed the fleshy or fatty frog, and offers the same contour as the horny frog, of which, in fact, it is but a reduplication. The heels or "cartilaginous bulbs" of the cushion are the prominent and most posterior portions, separated from each other on this face by a deep angular space, called the "median lacuna of the plantar cushion;" from them proceed the branches which, uniting towards the

middle of the plantar surface, at the termination of the middle lacuna, constitute what is known among hippotomists as the "pyramidal" body. This prominent portion of the cushion corresponds to the lower surface of the navicular bone. The pyramidal body terminates in a point beyond the middle of the sole towards the toe. On the outer side of each of the branches is a space which isolates them from the bars of the wall. These spaces are named the "lateral lacunæ."

In its structure, the plantar cushion differs somewhat widely from that of the cartilages or coronary cushion. Essentially composed of a framework of white fibrous tissue, which, in certain situations, would appear to be continuous with that entering into the composition of the lateral cartilages, its histological anatomy seems lately to have been rather misunderstood. We have spoken of an inferior and superior tunic or covering belonging to this elastic body; but to facilitate description, it may be stated that this envelope is a strong, continuous membrane, composed of dense white fibrous or inelastic tissue, from the inner surface of which proceed planes of fibres whose direction is more or less horizontal, or oblique forwards and downwards. In fig. 3 this stratification is made apparent in the vertical section. Though more or less interlaced with each other, a careful dissection will show their general disposition in wide horizontal or oblique layers, each of which is a band of dense inelastic tissue, that sends branches to the layer immediately in front or behind it, and thus constitutes a close mesh, whose spaces are widest at the heels and least towards the apex of the cushion. These interspaces are occupied by a yellow material, whose colour is in striking contrast with the pearly white hue of the inelastic framework, and the resemblance of which to adipose tissue procured for the whole cushion the designation of "fatty frog," given to it by the older farriers and hippotomists. That this substance is fat was the general opinion, I understand, until the publication of Professor Bouley's admirable treatise on the horse's foot. That gentleman discountenanced the popular belief as to its adipose constitution, and took some pains to demonstrate that each of the interspaces was occupied by a very delicate membrane, possessed of great elasticity, which was folded or rolled upon itself many times, and was continuous throughout the cushion.

I regret very much that my careful examinations of this tissue do not corroborate the learned professor's description, as I cannot discover the existence of a special elastic membrane disposed as stated by him. On the contrary, these

examinations have convinced me that the old idea was the correct one, and that this yellow substance is in reality fat enclosed in a network of areolar or connective tissue. This will at once become apparent to the histologist. Examined microscopically, it is found that the spaces are filled with masses of fat-vesicles, so close and numerous in places that the connective tissue can scarcely be perceived. This connective tissue is but loosely attached to the planes of inelastic fibres, and may be easily dissected from them. Towards the heels, where the spaces are widest, the masses of adipose vesicles are, of course, largest and most numerous, and as these spaces decrease on nearing the point or apex of the cushion they diminish in volume. Everywhere, however, their elements are the same; large cells or vesicles, of varying size, often containing nuclei, and meshes of connective tissue, in which yellow elastic as well as white fibres are interwoven.

Blood-vessels, in well-injected specimens, are observed to pass along the planes of fibrous structure, sending off on their course numerous ramifying branches among the fat and connective tissue between them.

This composition and arrangement of the plantar cushion admirably disposes it to play a most important part in the functions pertaining to the horse's foot. The inelastic planes of fibres, whose meshes are filled with fat, are so placed as to resist a large amount of downward and backward pressure. By their interlacing and general disposition they, in one aspect, resemble the network enveloping a balloon, while in another they look like a number of netted hammocks laid on one another, and united by cords passing obliquely and perpendicularly between them, so as to compose a powerful suspensory bed, capable of withstanding a heavy superincumbent load, as it hangs between its proper supports. Its intimate union with the lateral cartilages and the coronary and pedal bones ensures these supports. By means of its upper attachments to the small metacarpal bones, and to the posterior aspect of the fetlock and tendons, the fibres of the cushion are maintained in a sufficiently extended form, and kept in the position in which it may act most efficiently; at the same time, its lateral attachments assure its being moderately expanded behind and beneath the deep flexor tendon. The fat contained in its interstices completes it as a resilient apparatus. We know that masses or pads of fat are found in other situations in the body where elasticity, smoothness, softness of movement, and relief from pressure of more vitally endowed tissues, are required.

Nothing can be better adapted for these purposes than the vesicles of adipose tissue: consequently we find the plantar cushion abundantly supplied with this material where it is most needed—towards the posterior and inferior parts of the foot.

The comparative anatomist will at once perceive that we have, in the elastic apparatus of the horse's foot, an arrangement not found in that of any other animal outside the family of solipeds, and which, though to some extent complicated—as the demands made upon the organ itself are complicated—is yet most admirably adapted to the requirements of this extremity of the limb, forming, as it does, one continuous structure surrounding its circumference, and protecting the most essential and vulnerable portion of its plantar face.

To form a good estimate of its form and disposition, with a view to comprehend the part it plays in the economy of the foot, it has been suggested to remove the coronary and navicular bones, as well as the expansion of the deep flexor tendon, from the pedal bone, taking care, however, to leave the lateral cartilages and plantar cushion as intact as possible. The effect of this will be understood by referring to figure 3, representing a longitudinal section of the foot. It will then be observed that this resilient, suspensory, and weight-diffusing structure, in its entirety, together with the pedal bone, constitutes a kind of basin-shaped receptacle, partly bony, partly fibrous and fibro-cartilaginous. In front this cavity is bordered by the pyramidal process (fig. 9, *i*), and around it, and extending along the sides of the organ towards the heels, is the plantar cushion; on each side are the large plates of cartilage (fig. 9, *ff*), and, behind, the upper margin of the plantar cushion. It will also be observed that this composite surface offers two inclined planes, which are opposed to each other; these are situated, one before, the other behind. The first is the shortest and densest, and is formed by the articulating surface of the pedal bone (figs. 4, *f*; 9, *h*); the second, or posterior, slopes in an opposite direction from behind to before, is the longest and by far the most extensive, and is constituted by the upper or front surface of the plantar cushion.

On these two planes, then, inclined towards each other, and composed, as they are, of a diversity of materials bound together in the most admirable fashion, the whole weight of the body ultimately falls after its transmission through the rays forming the column of support, the last of which is imbedded in this bony, fibrous, and cartilaginous socket. The manner in which they distribute this weight, without impairing, in the slightest degree, the other functions of the foot, will be considered presently.

As has been casually remarked, and as might be expected from their relative positions beneath the centre of gravity, as well as their dissimilar functions, the elastic apparatus is more developed in the fore than the hind extremity; more particularly is this to be noted in the cartilages, their superficies and thickness being much greater in the one than the other. One of the peculiarities attending this increased development, in connection, no doubt, with the difference in texture, is the liability of these cartilages to become wholly or partially converted into bone in the fore feet, by which their elasticity and flexibility are lost; so that the entire organ is much constrained in its movements, and lameness to a proportionate degree is generally the result.

In the foot of the ruminant animals, such as the ox and sheep, or, indeed, in the foot of any other than a soliped, we do not find an apparatus of this kind, the division of the foot into toes rendering it unnecessary. The two pedal bones of ruminants to some extent resemble the single one of the horse when they are placed together. But they do not show anything like the same degree of porosity for the passage of vessels, neither do they display to any appreciable extent the admirable arrangement of the bony tissue for sustaining weight; they have no lateral cartilages, the basilar and retrossal processes are absent, so are the depressions on each side of the pyramidal eminence for the insertion of the lateral ligament, and the plantar and coronary cushions are but feebly developed.

The absence of such an arrangement as we have just described for the horse is compensated for by the elasticity arising from the cloven foot, and particularly by the somewhat complicated disposition of the ligaments, more especially the interdigital, that bind the articulations of the phalanges and pedal bones, and are more or less closely united to the double tendons and fibrous structures surrounding them; two of these ligaments—an interal lateral and the single anterior—are elastic. The disposition of the interdigital ligament in the ox is curious, from the numerous connections it forms with the tendinous and fibrous expansions of each claw.

The ox and sheep have, of course, two navicular bones in each foot, one being assigned to each claw.

The foot of the ass, and, to a varying degree, that of the mule, on the contrary, has this elastic combination relatively more highly developed than even the horse—a circumstance due to the peculiar shape and density of its hoof.

(*To be continued.*)

THE PROPOSED CENTRAL VETERINARY MEDICAL SOCIETY.

By G. Fleming, Royal Engineers.

The Editors of the *Veterinarian*, and those who are exerting themselves in the attempt to form a Central Veterinary Society, deserve the best thanks and most cordial support of the profession, more particularly of the members who reside in London and its vicinity, for their earnest and persistent efforts to achieve this object. In such hands and with such management success cannot be doubtful; and it is only with the intention of making this success, if possible, more complete, beneficial, and durable, that I now venture to appeal, in the most earnest manner, to those who hesitate to give this movement their countenance, and to induce them to reflect on the urgent need there is for the proposed organization. Viewing what has been done in this direction in the provinces of the United Kingdom, and the great boon conferred, not only on the veterinary profession, but on continental nations, by the labours of foreign societies of this character, established many years before they were thought of in this country, it has always appeared a mystery to me why such a project should not have been successfully carried out in London long ago. Nothing could be conjured up to explain the mystery, except the existence of a most discreditable indifference to the interests and progress of veterinary medicine. This indifference, commencing with the Government of the country, seems to have affected, more or less, almost every graduate as soon as he received his diploma, and the evil, far from stopping there, has cast its malignant influence over the mind of the public; so that, instead of being recognised as a scientific body whose deliberations should be listened to with respect, and whose claims to estimation and encouragement ought not to be ignored, we occupy a position, it may be truly said, but little advanced beyond the unscientific and unenlightened status of farrier.

The proposed society, if conducted as we hope and expect it will be, and if its members are animated by a deep sense of professional duty, and that zeal which is the mainspring of all beneficent enterprise, should prove of great service in promoting veterinary science, and bringing its aims and aspirations more prominently before the public than anything that has yet been attempted by us. For it must be remembered,

that when any question connected with our science comes before the world, no matter what its importance may be, or whether the welfare of the whole agricultural community be at stake, we have no central organization in which that question may receive full and fair discussion, and the public be informed as to its importance and its immediate or remote consequences.

We are compelled to remain mute, and it is, therefore, taken for granted that we are incapable of forming an opinion, and are of but little use to the community at large. What better example could be afforded of this lamentable state of affairs than our position during the late invasion of cattle plague? Had there been, in 1865, a Central Veterinary Medical Society in London, enjoying the confidence of the public, and whose decisions were acceptable as trustworthy, a grievous national calamity might have been largely averted, and our profession spared the indignant and humiliating reproaches undeservedly heaped upon it by almost every one. Isolated individual efforts were then, if not altogether unavailing, at least all but rendered powerless by the overwhelming torrent of panic, ignorance, and prejudice prevailing; but would this have been the case had the whole profession been heard through a central society? I am certain it would not. The veterinary profession, disunited, speechless, is but of little advantage to itself, and perhaps still less to the public; united, organized, determined that it will be heard, and that it will assume that position among the sciences and in public estimation which it has every right to claim, it will be in a fair way to accomplish its highest duty.

As has been very properly and justly remarked, in the leading article on this subject in the *Veterinarian* for May, there are many subjects of paramount interest and importance to science which can only be investigated and discussed by such an organization. Veterinary medicine in this country, it may be asserted, has scarcely yet commenced its career or entered upon its higher duties. There is a vast, an almost limitless expanse of research and investigation still before it, which the few scattered but enthusiastic labourers in the field have been unable to touch. Such a society as that now under consideration alone affords the best prospect of successfully entering upon this new ground.

Next to the benefits our science and the public interest will derive, must be remembered the improvement such a society will effect in the case of individual members, by the stimulus it will give to their mental faculties and powers of observation, causing them to search, read, study, write, and speak.

The idea has too long prevailed that a veterinary surgeon should be little better than a roadside farrier, and that it is undesirable that he should read, write, study, have recourse to those auxiliaries in research which other sciences eagerly adopt, or be anything else than a "practical man:" that is, one who leaves his profession as he finds it, and has but little besides the rule of thumb for his guide. This erroneous idea has been fatal, not only to the progress of veterinary science, but has worked incalculable harm to its reputation. Those who comprehend the wide range of subjects embraced by the science, and the deep study that many of them require in order to become even partially acquainted with them, will easily see what a pernicious influence this teaching has had, and how much it has done to degrade the position of veterinary medicine. It only needs a society like this, under the management of able men, to dispel such a baneful illusion, and to show that few sciences demand more careful, incessant, and well-directed study by highly cultivated minds. If we required any proof of this, or of the benefit to be derived from such an organization, I would with pleasure refer to the proceedings of the *Société Centrale de Médecine Vétérinaire* of Paris. When we look at the methodical way in which its business is conducted, the highly scientific, thorough, and intellectual manner in which all subjects are discussed, the disinterested motives which induce its members to allot a large share of their valuable time to the investigation of matters brought before it, the long list of distinguished names entered on its list of members, whether titular, honorary, associates, or correspondents, we can be moved by no other feeling than that of admiration, and need not be astonished to find that the deliberations of this body have proved of great advantage to the French empire, and added immensely to the estimation in which veterinary medicine is held in that country. I can see no reason why the proposed society should not prove a generous rival to that in the French capital. It is sad to reflect that, though the horses, cattle, and sheep in this country are the finest and most valuable of any in the world, and though our colonial empire is so immense and almost exclusively agricultural, we are yet behind the smallest German state in veterinary matters. Much of this is doubtless due to the neglect of Government; but it must be confessed a great deal more is owing to our own apathy, want of education, lack of scientific training, and narrow-mindedness.

Great good, I am certain, can be effected by the Central Veterinary Medical Society. It should command the best

talent of the metropolis and the provinces, and will deserve to obtain the assistance of those members of the profession who can realise that to remain as we now are, and have been, is to imperil our existence as a scientific body—if we really exist at all as such.

It is to be hoped that when the society is once fairly started donations of books, as well as pathological contributions, may be received, with a view to forming a reference library and museum.

It will be observed that I have alluded to the proposed organization as the "Central Veterinary Medical Society." Whatever designation its projectors may ultimately fix upon, I scarcely think that of Veterinary Pathological Society would be sufficiently explicit, or would justly indicate its objects, which, to be of public interest and utility, must be more than those of a merely pathological character.

CANCER OF THE PENIS—AMPUTATION.

By D. B. Howell, M.R.C.V.S., Reading.

The subject of this case was a bay pony, the property of Mr. George Lovejoy, librarian of this town, who purchased him out of a Welsh drove when a yearling, in 1861. In May, 1863, I castrated him, and from that time, with the exception of a few attacks of influenza, he enjoyed perfect health. In July, 1869, I removed nine warty excrescences from the penis, the largest being about the size of a pigeon's egg, and several others from the scrotum, inner side of the thighs, &c. These tumours, which had been gradually increasing in size for the previous three to four months, were entirely removed by the operation, and each wound properly cicatrised.

In the early part of the present year my attention was called to the state of the penis, which protruded from the prepuce, and could not be retracted, owing to the presence of several scirrhous tumours on the glans and body of the organ. Seeing at once that it would be necessary to perform a formidable operation, I hesitated in consequence of the extreme coldness of the weather, and deferred removing the growths until March 2nd.

It is probable that the disease commenced shortly after the removal of the warts, although it did not attract notice until about the middle of January last, as up to that time, notwith-

standing he micturated properly, the penis had not been protruded for several weeks previously. The disease only became apparent when it had increased so much that it could no longer be concealed within the folds of the sheath. On being relieved from the constriction, and probable contraction of the orifice of the sheath, it was able to grow more rapidly than when under the confinement mentioned.

The pony had a good appetite, was lively in spirits, and in good condition, and did not appear to have suffered from pain during the progress of the disease, excepting when the raw surfaces of the tumours were rubbed or touched. There had been a good deal of hæmorrhage at different times, and just before the operation a rather profuse bleeding occurred, which produced a slight amount of constitutional debility, which, however, speedily passed off.

On casting the patient, and drawing out the penis to its full extent, I found that the cancerous growth extended up the body of the organ; I therefore determined to remove it *en masse*. Having an assistant drawing gently at a ligature, and having secured the upper end of the penis in a clam, as close up to the body as possible, I cut through the penis with a sharp firing iron warmed to a moderate heat. No hæmorrhage took place. At the same time I removed a small epithelial cancer from the inner side of the off thigh.

Examination of the parts removed.—The principal portion consisted of a tumour rather larger than a goose's egg, flattened, and somewhat oval in shape, extremely hard, almost as much so as cartilage. The section was quite smooth and homogeneous, no bloody points, very much in appearance like the section of a potato, the technical name of which is solanoid (potato-like). The tumour was enclosed in a thin cyst, which was very vascular on the outside, moist and shining, had bled very readily before it was removed. At its most extreme part another tumour, about the size of a hen's-egg had been attached by a short pedicle. It was of a different structure from the one from which it sprung, being more of a hæmatoid nature, the section presenting a dark appearance, like the section of a tumour of fungous hæmatoides in the human subject. It was enclosed in a thin cyst like the larger one, the outside being covered by a firm coating or crust of coagulated blood, apparently recently effused upon its surface. This smaller tumour had become detached from the larger one, through the struggles of the patient when being cast. There were three other tumours about the size of walnuts, attached to the larger one, of the same dense structure as described. There was also another one which was not exactly in connec-

tion with the general mass. It was about two inches long, and completely surrounded the urethra, and composed of cancerous matter effused into the cells of the corpus spongiosum. The septa of this structure, when examined with a low-power magnifying glass, showed that the morbid matter was effused into the cells, looking like a collection of granular masses of deposit, the septa intervening. This portion was not by any means of such dense structure as the other masses, and was only moderately vascular.

Treatment.—No effusion took place into the surrounding parts to those removed. Mild aperients with sedatives were occasionally given, and at first the animal was fed on succulent diet, and afterwards with carrots, hay, &c.

He passed his urine without trouble, kept very lively in spirits and went on well until March 30th, when the attendant found him in the early morning lying on his side, without any inclination to get up. On visiting him I was struck by the peculiar anxious state of his countenance, and the entire absence of any symptoms of pain, either abdominal or thoracic. Passing the hand *viâ* rectum, I found the bladder empty.

After administering some medicine, I left him for a short time, when I was again sent for, but he died before I reached him.

Post-mortem examination.—Having had the body removed to my own premises, in the presence of an eminent surgeon, who has frequently attended such examinations, I cut through the abdominal muscles, and thus brought to light the existence of a low degree of peritonitis throughout the cavity, and a large quantity of sanguineous fluid and flocculi of cancerous deposit floating among the intestines. The bladder at its fundus was ruptured, and close by was attached by adhesion to the intestine.

This at once accounted for the absence of pain during the last few hours, as the rupture probably took place during the night, and the hæmorrhage continuing slowly, death ensued without any marked symptom. The bladder was increased to about four times its natural thickness, and at its fundus cancerous ulceration of its coats had taken place. The vessels giving way, lesion of its coats ensued, followed by internal hæmorrhage and death. At its cervix there was also another large cancerous patch, but none existed down the course of the urethra, nor was the latter constricted in any part. Healthy restoration had taken place at the part amputated, and also on the inner side of the thigh. The whole of the other internal organs were perfectly healthy.

Mr. F. Bulley, F.R.C.S., saw the disease *in situ*, and suggested the use of the actual cautery in preference to the knife, and kindly assisted me in the examination of the parts removed. At the request of Mr. — Moxhay, I attended, as a visitor, two monthly meetings of the Pathological Society, held at the Royal Berkshire Hospital in this town, when the morbid specimens were introduced to the notice of the members of the Society. My thanks are due for the courtesy with which they were received, and the suggestions which were offered.

In 'Histological Demonstrations,' by Messrs. Harley and Brown, the articles on scirrhus and encephaloid are peculiarly interesting to any one meeting with cancer, and the book should be in the possession of every veterinary surgeon. I agree with its authors in the opinion that surgical operations often accelerate the appearance of secondary cancer in parts distant from the original seat of the disease, and that its recurrence is especially characteristic of its malignancy. The case before us proves the truth of this, although there is every probability that infiltration would have taken place without the operation; and even supposing such would not have occurred, I was compelled to remove the parts to enable the animal to be used by his owner.

I also know of a case in the human subject, in which I assisted the operator a short time since, in which secondary cancer developed itself in the parotid and submaxillary glands, subsequent to the removal of a cancer from the point of the ear. At the moment of my writing the patient is past hope.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 373.)

As we have examples of different kinds of fairy-rings in our home meadow, we commence this article with a description of them.

In a survey of the rings of this field, made in 1869, we constructed a chart of more than thirty rings, more or less perfect in outline, and being very variable in size.

At the present moment, however, we cannot make out more than half of the number of the previous year, but many of these possess a most perfect outline, but the rest appear

as though broken up into irregular masses, lines, or patches of green.

Six of the most perfect rings in the meadow may be shortly described as follows:

1. A double ring 27 feet diameter; the roots of the decaying grasses and the surrounding mould being highly charged with the *Mycelium* of *Agaricus gambosus*, from which in May of last year we had several meals of delicious mushrooms.

2. A double ring, 15 feet 6 inches diameter. In this, too, the outer ring is charged with *Mycelium;* in this case of the *Ag. oreades* from which last September we enjoyed the "champignons."

From both these we expect crops of fungi this year, though they will be late on account of the backward season. But it should be observed that the *Mycelium* does not always produce fungi. These latter, like fruits, depend on season.

3. A single ring, 18 feet diameter. This was partially occupied by *Ag. personatus* three years since.

4. A single ring, 21 feet diameter.

5. The like, 15 feet diameter.

6. The like, 15 feet 6 inches in diameter.

Of these the three last have not been observed to contain fungi, nor can any *Mycelium* be traced in the soil about or near the circles.

The two first forms will be best understood from the following diagrams:

Fig. 1.

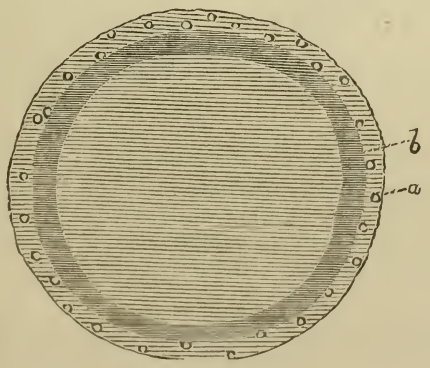


Fig. 1. Fairy ring.
a. Brown grass occupied by fungi.
b. Greener grass of the interior ring.

Fig. 2.

Fig. 2. Section through a newly formed ring.
a. Vigorous grass fed from the vacant ground *c*.
b. Outer ring of poorer grass, which may or may not be occupied by fungi.

In these diagrams fig. 1 shows the form of the double or most perfect fairy-ring, as it may be seen in March or April, with an inner greener ring, occupied by strong-growing grass, and an outer or brown ring, in which much grass is dead. Towards the middle of May the outer ring becomes rich with strong growing grass, between which, and hidden by it will be found the *Agaricus gambosus*.

Fig. 2 shows a section through a ring of this kind, in which the strong grass at *a* is marked above the soil, while at *b* will be seen the *Mycelium* below the soil.

This, then, is a ring which increases centrifugally, and the fungus is the cause of the increase. Such rings may be very old as they continue; but there is reason to think that rings to which the fungi have not become attached soon break up, and are lost sight of.

In the cases above described the grasses are all of nutritious kinds, the prevailing one being the *Lolium perenne*, perennial rye grass, and the consequence is, that the vigour given to its growth causes a curious appearance when our field is aimed up for hay, as the heavier crop of greener grass makes a complete circle of prostrate herbage. When, however, it is depastured, the sheep keep the circles so closely cropped, that the rings are marked by the fresh green of newly springing grass; and when these animals are first put into a field they fly to the rings, which they eat off before any other part of the field. This observation is so opposed to the idea expressed by Shakespeare, in which he has been followed by our friend Mr. Lees, that we cannot forbear quoting the passage, together with Mr. Lees' notes thereupon, in order the more fully to explain this curious and interesting natural history subject. Shakespeare says—

> "You demy-puppets
> That do by moonshine green sour ringlets make,
> *Whereof the ewe bites not.*"

"Here," says Mr. Lees, our "great bard alludes to the current belief of the times in which he lived," and also mentions a rural fact, that we may suppose came under his par

ticular observation. Ewes, he states, will not bite the grass of a fairy-ring.

"Now, this is not true with regard to the *area* of the circle; but it is correct when the expression is limited to its *circumference,* which is truly *the ring that the ewe will not bite.* This I once satisfactorily proved by observation in the vicinity of Stratford-on-Avon, and probably in a field that Shakespeare had himself trod. In this pasture, through which was a foot-path, there was a flock of sheep grazing, and several rings of *Agaricus gambosus.* The exterior circle of each ring was occupied by a tall growth of the coarse grass called *Brachypodium pinnatum,* among which lay nestled and concealed the savoury agaric. The sheep had close-grazed most of the herbage of the field, but the grass occupying the circumference of the rings was entirely untouched. It was, then, doubtless, the *vernal* fairy-rings to which the immortal bard alluded."—E. Lees, *The Woolhope Club,* 1868.

Now, it is quite clear that in this case the peculiarly innutritious kind of grass was the real reason of its being refused by sheep, as observed by the poet, and afterwards by the naturalist; but when such favourite kinds as the *Lolium* in our home circles, and this and the *Dactylis glomerata,* as observed at the Agricultural College meadow, is improved by phosphatic manure, whether that be purposely employed or is derived from decay of fungi, these grasses become more succulent, and are consequently more relished by sheep.

But we have stated that many of our rings are without fungi; still, whether with or without these, we look upon it as a fact that the initiative of the circles is not necessarily connected with these plants, and this leads us to the inquiry, how are fairy rings formed?

Now, it appears to us that anything which may tend to kill a given area of grass may be the beginning of a fairy-ring.

Some years since we were asked to examine a meadow in which the grass was said to be killed in circular patches; as we were told, "the rooks had taken a fancy to it, and were eating it all out." On going to the field we observed several areas of variable size, in which the tops of the grass were turned upside down, as if for the purpose of being dried. On removing some of these, and turning away the soil, we were not at all surprised to see hundreds of the larvæ of the cock-chafer—*Melolontha vulgaris.* These the rooks were doing all they could to exterminate. After this a friend at a distance, who was suffering from a like attack in his meadows, was desirous of keeping the rooks from being disturbed. But our

object in this description is not to defend the rook, but to point out the origin of fairy-rings.

Immediately, then, after the destruction of these discoid patches of herbage, the herbage all round the outer margin of the denuded space assumed a ring-like belt of a more robust grass than that of the rest of the field, and for the same reason that at the present moment a row of barley next to our farm-path is taller and stronger than the row next to it, the fact being that in both cases the roots have no growth on one side to interfere with their full development.

In our own meadow we have at the present time some denuded patches of grass, caused by the leaving of separate lots of hay on the ground. This killed the herbage beneath, and now the ring of strong and taller grass, mostly of *Lolium perenne,* is fully established.

Now, the very vigour of growth of the rings of grass so established causes a secondary or outer ring, because this very plethora of an inner ring aids in the pauperism of the grasses next to them, and as starved grasses soon decay and die, we have in this secondary ring the very conditions necessary to the growth of fungi.

Suppose fungi to have so started, their decay from the very chemical elements they contain necessitates a vigorous growth of grass on their site, and besides, the ground having rested for a season from growing grass, would grow it all the more vigorously the next, with the same results to the grass beyond, and thus it is that these processes continuing, a ring gets larger.

That rich grass is at once formed where the *Ag. gambosus* is left, we have Mr. Way's testimony, as well as our own observations in proof. He says—

"An experiment was made of spreading some fungi on the grass of the pasture where the rings occur; the letters in the form of which the fungi were arranged were clearly visible a month afterwards."

We have tried the like experiments with the same effects.

It would seem, then, that these curious circles may be caused by anything that may tend to destroy a disc of grass; but their occupancy by fungi is dependent on after circumstances. If so occupied, they continue year after year, and increase; but if not, like many in our own meadow, they become broken up, and ultimately destroyed. Again, a good dressing of manure over a field in which they occur tends to the breaking up of the rings.

That fairy-rings follow the injury to grasses by the attacks of insect larvæ, and by the death of a disc of grass by rotting

material left on it for a winter we have ample evidence before us; and there is reason to believe that a too heavy dressing of stimulating manure by killing the grass would produce a like result. Salt, again, by killing the grasses, is known to be succeeded by fungi which, as we have shown, live upon the decaying elements of the grass-roots. It is then just possible that rings may occasionally follow some unexplained atmospheric cause; as the Dorset poet says—

"Zome
Do zay do come by lightnèn when do thunder."

This is the atmospheric theory. The same author gives the fairy theory in the following words:

"Zome do zay sich rings as thick ring there is
Do grow in dancèn-tracks o' little veäries,
That in the nights o' zummer or o' spring
Do come by moonlight, when noo other veet
Do tread the dewy grass but theirs, an' meet
An' dance away together in a ring."
Barnes' Poems on Rural Life in the Dorset Dialect.

It is a curious fact that the Dorsetshire peasant of our day gives the name of *veärie* to the stoat and weasel, which suggests the possibility that these quadrupeds might have been observed by them roaming about the sites of fairy-rings in search of the larvæ by which the area of the circle is first formed. At all events, our labourers believe that their veäries have some connection with the rings.

This suggests the probability that the mole-tracks observed about fairy-rings by Mr. Lees are caused by these voracious creatures visiting the bare patches made by the melolontha, and burrowing beneath the soil in search of them.

Our observations, then, lead us to conclude that fairy-rings are not usually caused by fungi, though these may take possession of a ring formed by other means. Nor do we suppose, with Aubrey, that the rings are produced by "*a fertile subterraneous vapour, which comes from a kinde of conical concave.*"

We cannot agree with the mole theory, for the reason that moles do not kill grasses, but, on the contrary, make a field more fertile; and although our landlord makes us pay a mole-rate for the destruction of these creatures on his estate, we have never seen any sign of one on our own farm; and if we had a choice in the matter, such is our love of these creatures, and such our conviction of the good they do, that we had rather pay a rate for their preservation. Were they preserved on our farm, we think it impossible that we should

meet with over 800 surface grubs in three rows of roots, and equally impossible would it be to meet with bald, rounded patches in our meadows, from which to extract *over thirty fat larva of the cockchafer in the space of a square foot.*

We think, then, that the primary cause of fairy rings is the destruction of circular patches of grass, and not the construction of rings in the first instance either by moles or electricity, and that these rings are subsequently occupied by fungi results from these lower plants, called by Linnæus the *scavengers of nature,* living upon the decaying elements of higher kinds of vegetation.

Pathological Contributions.

CATTLE PLAGUE.

Since our last month's report, the information which has been received relative to this disease shows that very little change from the then existing state of things has taken place. The plague continues to be very rife in Poland, and in those parts of Russia which border on East Prussia.

The malady also prevails in Galicia and Transylvania, and still lingers in the district of Trebizond, in Asia Minor.

The report which appeared in the public papers of the *cattle plague* having broken out in the province of Doubs, France, near to the frontier of Switzerland, we have good reason to believe owes its origin to the appearance of the foot and mouth disease in that district. The *cattle disease,* as this malady is not unfrequently called, is often interpreted the *cattle plague* by unprofessional writers, and it is probably owing to this circumstance that the report appeared.

Our readers will observe that the matter has been brought before the notice of the House, and that an explanation has been given of the steps which were promptly taken by the Government.

FOOT AND MOUTH DISEASE AND PLEURO-PNEUMONIA.

During the past month very little alteration has taken place with regard to the prevalence of these diseases, thus showing the ill consequences which continue to result from a want of

uniformity of action on the part of the local authority in the several counties of Great Britain. Until more energy is displayed, and efficient inspectors appointed throughout the country, we cannot hope for much improvement in the present state of things. Foot and mouth disease exists in fifty-six counties, and pleuro-pneumonia in forty-two. The former had 862 centres of infection at the middle of the month, and the latter 124. Out of 208 animals suffering from pleuro-pneumonia during the week ending May 14th, thirty-nine are reported to have been killed, and twenty-one to have died. In the dairies of our large towns, and especially in the metropolis, numerous cases occur which are never seen by the inspectors, the animals being got rid of at a time and in a manner best suited to the owner. It cannot be said that lung-diseased cows find their way, even when in a dying condition, to the knackeries, except in very rare instances. They have a value far too great for this in the estimation of the low-class butcher and the sausage maker.

RABIES IN LANCASHIRE AND YORKSHIRE.

From the accounts which have reached us, it appears that cases of rabies still continue to occur at short intervals in many parts of Lancashire and Yorkshire, more particularly in the latter county, where several persons are reported to have been recently bitten by rabid dogs. Much alarm prevails in consequence of the prevalence of the malady, especially in many of the towns of the North Riding. Our readers will remember that in the March number of our Journal a record of four cases of rabies in cattle was given by Mr. Worthington, M.R.C.V.S., Wigan, which occurred as far back as November and December, 1869. The facts show that no abatement of this horrible disease has since taken place, and we fear that, unless some energetic means are adopted for its extermination, we shall experience a still further extension of it among all classes of animals. The question as to whether rabies can be propagated by the herbivora may still be a moot one; but it should be borne in mind that experiments of inoculation with the saliva of rabid sheep have shown that the malady can be thus communicated to rabbits.

Continental investigators are also fully satisfied that the activity of the virus remains after it has passed through the system of herbivorous animals.

LUSUS NATURÆ (*Ectopia Cordis*).

We are indebted to Messrs. Perrins and Carless, M.R.C.V.S., Worcester, for an interesting *lusus naturæ*, in which the heart was found to be placed extern to the thoracic cavity. This organ was situated at the lower part of the neck, where it was lying in tolerable close contact with the bodies of the cervical vertebræ. It was surrounded by a pericardial sac, and furnished with the ordinary trunks of both arteries and veins, but had a diminished size and flattened form. The *lusus* was the produce of a cow. Excepting in the abnormality described it appeared to be perfectly formed.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"Return of the number of foreign animals brought by sea to ports in Great Britain, which on inspection on landing, within the month of April, 1870, have been found to be affected with any contagious or infectious disease, specifying the disease, and the ports from which, and to which, such animals were brought, and the mode in which such animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Cherbourg	Southampton	Foot-and-Mouth.	...	...	...	36	36	36
Dort	London ...	„	1	...	...	...	1	1
Geestemünde...	„ ...	„	2	...	...	...	2	2
Hamburg .	„ ...	„	6	...	...	...	6	6
„ ...	Hartlepool							
„ ...	Newcastle-upon-Tyne	„	1	...	...	...	1	1
		„	1	...	...	...	1	1
	Total ...		11	...	...	36	47	47

"ALEXANDER WILLIAMS,
" Privy Council Office, Secretary.
" Veterinary Department, 12th May, 1870."

CARBOLIC ACID IN SKIN DISEASES.

There are few agents which are more useful for the destruction of *epizoa*, or more beneficial in numerous eruptive skin affections, than carbolic acid. A want of caution in its use, however, has led to several serious results, particularly when applied to the skin of the dog. Great care is always necessary in properly incorporating the acid with its diluting agent. It mixes better with a solution of soap than anything else—one part of the acid to fifty of the soap solution being sufficient. The mixture should also be well shaken for some time before being applied, that any separation of the acid which may have taken place may be guarded against. We have known dogs to be quickly killed by carbolic acid applications to the skin when these precautions have been neglected.

Facts and Observations.

New Work on Chemistry for Medical Students.—Most, if not all, chemical works written by English authors are deficient in the application of chemistry to the healing art, or in the connection which exists between chemistry and the other sciences upon which rational medicine is based. The medical student, certainly in utilitarian England, wishes to know of what use a knowledge of chemistry is to be to him in his profession; but owing to the thoroughly abstract manner in which most chemical writers and teachers treat their subject, this very natural desire is only slowly and partially satisfied. Consequently, there is engendered among the pupils at our medical schools an indifference to, if not a positive distaste for, a branch of knowledge to which is justly attached the highest importance by all save those who are ignorant of its truths and the services it may render, or by those practitioners of medicine who prefer empiricism to the teachings of experiment, observation, and reason.

M. Alfred Riche, *Professeur agrégé à l'Ecole Supérieure de Pharmacie de Paris, Chevalier de la Légion d'Honneur*, &c., has recently published a '*Manuel de Chimie Médicale et Pharmaceutique*,' which appears to be well calculated to excite the interest of medical students by the examples frequently given of the applications of chemistry to physiology, pathology, biology, and pharmacy. At all events

such appears to be the opinion of Professor Tuson, whom we learn will be engaged during the vacation in translating and editing the above-named work for the use of the English medical student.

The Pennsylvania Oil Trade.—The statistics of the American Pennsylvania crude oil industry for the past year are now published. The total production of the year was the enormous amount of 4,215,142 barrels, being a daily average of 11,548 barrels. The production of 1868 was 3,715,741 barrels, the increase of 1869 over the previous year thus being 499,401 barrels, the increase per day being about 1460 barrels.—*Journal of the Society of Arts.*

Albumen.—The consumption of albumen, as applied to different purposes, is enormous; in calico printing alone for fixing on cloth the new aniline colours, Alsace, in France, uses 150,000 kilogrammes, or about 330,000 lbs. a year of egg albumen, representing 37,500,000 eggs, or the product of 250,000 hens.—*Ibid.*

Warehousing Petroleum.—At Antwerp some interesting experiments are now being made, for the purpose of testing a suggestion of the possibility of escaping the danger of a conflagration from the ignition of petroleum, by warehousing it under water.—*Ibid.*

Curious Instance of Spontaneous Combustion of the Human Body—Dr. Bertholle.—This paper relates a duly authenticated case of this rare phenomenon. The victim, a woman, aged 37 years, was a confirmed drunkard. Many of our readers will recollect, perhaps, that Professor Liebig wrote a paper on this subject some years ago, when the medico-legal question arose concerning the death of a noble lady in Germany.—*Chemical News.*

On the Use of Ether as an Intoxicant in the North of Ireland.—We have received from Mr. H. N. Draper a pamphlet on the above subject, from which we learn that the use of methylated ether instead of alcohol is very general in the counties of Londonderry, Antrim, and Tyrone. The quantity taken at one time is from two to four drachms, and the dose is repeated twice, thrice, or even four and six times daily. Mr. Draper treats the subject in its relation to the Inland Revenue and also to insurance companies, the former suffering by the practice to the extent of £5666 per annum, while the risks of the latter are increased by such an inflammable liquid being stored and handled by people ignorant of its properties.—*Ibid.*

Dangers of Arsenical Green Pigments.—The Prefect of Police of the Seine (Paris and environs) has very properly issued a notice calling attention to the great danger attending the use of these pigments for imparting colours to the edges of books and various articles of stationery, to which these, specifically, very heavy materials are merely fixed, either by thin glue-water or gum. It is a well-known fact, the police notice says, that, even when mixed with linseed oil, these pigments are liable to become loose and pulverulent (unless peculiar precautions be taken); and they are altogether unsuitable for the purposes just named, since they dust off, and thus may be inhaled and cause derangements of health. The manufacturers of the articles alluded to are, if they continue this practice after this day, amenable to legal proceedings, correctionally as well as *en matière civile* (liable for action for damages).—*Ibid.*

Use of Hypophosphoric Acid in Agriculture for the Purpose of Destroying Noxious Insects.—M. Martin proposes, more especially for the purpose of destroying the *Phylloxera vastatrix*, which makes great havoc in the vineyards, to apply hypophosphoric acid dissolved in water. The makers of phosphorus obtain a quantity of this acid in aqueous solution, which is thrown away as waste; but, since the transport of this waste liquid is too costly (it may be very usefully applied where it can be had with ease), the author describes a method of making hypophosphoric acid by the slow combustion of phosphorus. According to his experiments, 2 grms. of this acid, dissolved in 10 or 12 litres of water, is a strong poison for all kinds of insects, and not only does not hurt plants, but has the effect of increasing the soluble phosphates in the soil.—*Ibid.*

The Human Heart.—Professor Haughton, of Dublin, has calculated that the total daily work of the human heart (the ventricles only) is 124,208 foot tons. It does 50,876 foot pounds of work per minute for every ounce of its weight.—*Ibid.*

Sulphuretted Hydrogen.—M. Boillot states that, after he had placed sulphur in some jars which he had filled with hydrogen, and had passed an electric spark through the sulphur, which was thus ignited and volatilized, a perceptible quantity of sulphuretted hydrogen was produced.—*Ibid.*

THE VETERINARIAN, JUNE 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

EDUCATIONAL REFORM.

It is in some sense consolatory to find it not only in our own profession that reforms are considered to be necessary. At a recent distribution of prizes at the University College Professor Huxley said—

"Speaking of medical education, he had for twelve or thirteen years been an examiner in the University of London. Although the men who came up there were the pick of the London schools, he had found them all labouring under certain disadvantages, owing to the defective system of education now pursued. What had struck him during his long experience of the best instructed of the medical schools, was the singular unreality of their knowledge of physiology. He did not complain of the quantity, for there was, if anything, too much of it, but he did quarrel with the quality. He had invariably found that the men who came up for examination did not know their physiology as they did their anatomy. While anatomy was properly taught as a science, physiology was taught as if it were a mere matter of books and hearsay. This was not a desirable state of things, and his earnest conviction on the point had led him to the somewhat bold course of publicly stating his opinions. Anatomy, which lay in the direction of practice, might be thoroughly taught, but this was not so with physiology. From the very nature of the case the occupant of the physiological chair remained there until he had achieved professional success, and then he left it; he was clothed, but physiology was bare. The remedy he suggested was the centralisation of the teaching of the theoretical branches of the profession in not more than three central institutions, where able professors could be maintained. He would cut down these theoretical branches to a considerable extent, and would have the elements of physical science taught in the primary schools—physics, chemistry, botany, and the like. Comparative anatomy ought to be absolutely abolished, although it would involve the putting back of such branches as zoology and botany to the students' early education in ordinary schools. He would also abolish materia medica. He could not understand why gentlemen

who had to practise medicine should be obliged to learn all about drugs, and where they came from; they might just as well be required to learn all about cutlery because they used knives. If his views were adopted there would be left for the four years' study the following nine subjects:—Physics applied to Physiology, Chemistry applied to Physiology, Physiology, Anatomy, Surgery, Medicine, Obstetrics, Hygiene, and Medical Jurisprudence, which would be quite enough for one man's pursuit; and this course would not oblige a medical student to occupy his time with what would not be absolutely useful in his future life."

There are no portions of the curriculum which we can select as desirable to be abolished in veterinary schools; but we quite admit the force of the suggestion to commit the teaching of the theoretical branches of the profession to the ordinary schools. If students were sent to the veterinary colleges with a theoretical knowledge of the "elements of physical science, physics, chemistry, botany, and the like," they might occupy the short period which they are at present bound to devote to professional study to the acquirement of those subjects only which would be absolutely useful to them in their future career, instead of spending a considerable part of the too limited time in the mere learning of first principles.

Professor Huxley's views are somewhat startling in their novelty as in the boldness of their enunciation. They are quite worthy of our serious consideration, now that we are trying to devise a scheme of education which shall, in some degree, remove what many do not hesitate to call a scandal in the veterinary profession.

THE TEXAS CATTLE FEVER.

In the *Chamber of Agriculture Journal* of May 16th we read the following in reference to the importation of cattle from the River Plate:

"We are in danger of importing with South American animals the fearful Texan cattle disease, or Spanish fever. In a letter to Dr. Cameron, of Dublin, the honorary corresponding secretary of the New York State Agricultural Society says, 'I shall be very much surprised if the South

American cattle of the Pampas be not found subject to the same disease as our Texan cattle, and to carry the seeds of it in the same way—fatal to cattle of the temperate region to which they are imported, though showing themselves rarely in the imported animals. An examination of the organs of the next lot of South American cattle that comes to England ought certainly to be very carefully made at the time of their slaughter. If in no case there should be found any evidences of previous disease in the cicatrices of ulcers in the fourth stomach, and no abnormal appearances in the liver or spleen of any animal, it would go to show that no particular anxiety need be felt; but if the contrary should be the result, timely precaution should be taken, and further inquiry instituted.' "

Curiously enough, among our "clippings" we lit upon an extract from an American paper which furnishes a remarkable commentary on the above alarming prophecy. It is headed—

"The Texas Cattle Plague Humbug.

"The press is gradually learning the true nature of the cry against Texas cattle. The *Turf, Field, and Farm* commenced the discussion of the question, and discussion is leading to good results. The San Francisco *Examiner* thus denounces the cattle plague humbug:

"'The *Bulletin,* in the interest of the large cattle monopolists in this State, is still harping on the Texas cattle disease. It learns that large droves of cattle from Texas are entering the southern counties. This ought to be good news to the consumers of beef, and we congratulate them that there is some prospect of a reduction in the high prices now paid for that staple article of human food. The *Bulletin,* however, only looks at the matter as affecting the interests of the large cattle dealers, and calls on the Legislature to pass a law against the introduction of such cattle into our state. It says that "Illinois and other States have found it necessary to legislate on this matter, and their laws have been of the most stringent character." Yes, and we showed the other day that the Supreme Court of Illinois had just rendered a decision pronouncing the cattle law of that state invalid as infringing on the provisions of the Constitution, which gives to Congress the power to regulate the commerce among the states. But be this as it may, this whole cry against Texas cattle is the sheerest imposition. It is gotten up by cattle dealers for the purpose of enjoying a monopoly of the business. Texas cattle are as healthy as cattle in any other

State. It is not pretended that they show any symptoms of disease themselves, but that they possess some latent and mysterious seeds of it which can impart a fatal disease to cattle in other States. But even in the States that originated this hostility to Texas cattle the opposition has ceased. An enlightened public sentiment has confounded the schemes of the monopolists. A California Legislature will not be guilty, at this late day, of so unreasonable an act of hostility to a sister State as to lend itself to the grasping schemes of a few cattle speculators at home, who have grown enormously rich by cattle monopoly. We want all the Texas cattle that can be sent or brought to us.' "

Like the people of the Northern States of America, we want all the beef that can be sent to us, although we do not want the Texas fever, whatever that mysterious disease may be, along with it, and we confess we do not feel much apprehension of its introduction by South American cattle.

Extracts from British and Foreign Journals.

DAIRY FARMING.

By the Northern Farmer.

Introductory.—In the United Kingdom the dairy occupies an exceedingly prominent and important position, and is a branch of industry well suited to both the climate and soil of many districts of the country, as well as to the means and requirements of the farmers who make it a leading branch of business. Mildness and humidity of climate, and fertility of soil, are essential requisites for profitable dairy farming, the former being eminently conducive to the health and well-doing of the best and most useful breeds of cattle, while the latter is indispensable for providing a full bite of succulent herbage for the summer months, and for raising those root crops in sufficient abundance which are to provide food for winter and spring.

To the small farmer of limited means a dairy offers many inducements, even apart from favorable conditions of climate, soil, and facility for the disposal of his produce. Capital invested in agriculture being for the most part locked up for some considerable time, it is difficult for the needy or struggling man ever to attain anything but a very moderate degree of success, if indeed he can get on at all by even the most

untiring industry. When, however, a portion of his small capital is invested in the purchase of milking stock, and a part of the farm laid out to suit them, the return is immediate, and from this source money is conveniently got to meet the weekly payments for labour, house, and other incidental expenses, much inconvenience being thus escaped which would be altogether unavoidable in the case of having to wait for the ripening of the cereals.

It is highly necessary in establishing a dairy to take into very careful consideration the class of animals that will suit the farm, it being much better to get them of a size rather under than over the capabilities of the soil, as in that case improvement will begin at once; whereas, if the opposite has been the case, the stock must recede. This rule applies to all the breeds and varieties of the domestic animals; and its recognition in purchasing breeding stock will not fail of bringing about most successful results. A man possessed of large capital can easily place on his land animals of immense bone and substance, and of the most approved breeds; but he cannot so easily alter the character of his soil, and make it fit to carry such cattle; that must be a work of time, however great may be the expenditure with the view of improvement; and, consequently, it becomes good sound policy to keep both stock and soil progressing in the same ratio. If the dairy is to be the leading source of profit, and its produce in the utmost obtainable quantity the sole object, independent of all other considerations, a breed of cattle should be selected famed for its large milking capacity, no animal being retained in the stock, which, after a fair trial, has been proved to be a poor milker, her produce not paying for keep and attendance. On the other hand, when milk and butter do not take first place, the rearing of young cattle being carefully attended to as a source of revenue, a more valuable breed will be desirable, one which reaches maturity at an early age, so that in whatever condition the animals are sold off the farm, whether as stores or fit for the butcher, they may bring remunerative prices.

For a purely milking dairy, and more especially on soils of light or medium quality, the Ayrshire can scarcely be excelled. This breed is characterised by hardiness and activity, the cows keeping themselves in good condition, and giving a large quantity of milk in proportion to the consumption of food The most serious objection to keeping large-framed cattle on land light of surface, is the tendency they have to lose flesh while milking largely; the actual loss in money value of the animal herself, being little more than met by the whole

season's produce. The Ayrshire is just constituted to meet this difficulty, her compact and tidy frame being easily kept up; her coat is always shiny and healthy looking, unless positively starved outright, and the close of the season invariably finds her in blooming condition. For the combined dairy no cross need be desired better than that between a Shorthorn bull and Ayrshire cow, both animals being pure specimens of the breed which they represent. The stock thus bred are exceedingly valuable for every purpose, as they inherit the large milking capability of the one parent and the fattening properties of the other. In every case where the object of the farmer is two-fold, the herd should be sufficiently well bred to permit of the way-going animals to be fattened and cleared off at the age of two years, so that the permanent stock of milkers may be interfered with as little as possible, and a full bite preserved for them. The very fact of the breeder having it in his power to do this by the use of first-class male animals, ought to be one of the strongest inducements to his keeping only the best, and utterly ignoring those which are cross-bred. Pure breeding we thus find tends largely to economy of food, by conducing to early maturity; and materially quickens the return of capital. A heifer or bullock, the sire of which was pure-bred, will in general bring as much money at the age of two years as could be obtained for it a year later had both parents been cross-bred. If it suits to clear off the young spare stock only in store condition, the superiority is quite as marked, proportionately large prices being received according to quality, and, moreover, they are always saleable. On dairy farms, where the cattle are carefully bred, with a view more especially to the profitable production of milk, and where it is not convenient to feed the spare stock, very good results may be obtained by rearing the heifer calves only, retaining them on the farm until they have milked two seasons, and then disposing of them as they approach their third calving time. Being now in their very prime they can easily be sold at remunerative prices, well repaying their breeder for his skill and trouble. And if the possession of merely young animals gives a little more trouble, and scarcely perhaps such a large annual return, yet the high price received on the average for the off-going stock amply makes up for the difference. When this mode is followed there are never any aged cows to weed out, which must be sold for a few pounds, the loss in value making a serious inroad on the animals' produce for the previous season. Being successful in obtaining big prices affords much encouragement to rear as many calves as

circumstances will permit, and acts as a powerful inducement to breed carefully, and get a name for turning out thriving beasts, good specimens of the breed to which they belong.

Selection of a Bull.—The surprising influence for good which the male of pure descent, whatever the breed, exercises on the quality and character of the future offspring being now well understood, no effort should be spared to procure purely-bred bulls, and on no consideration should a cross-bred animal be used. The extra price is not worth a thought, as by the time the progeny of the pure-bred bull have reached the age of twelvemonths they will have paid not only the difference between the pure and the cross but the entire value of their sire, and that without either extra feeding or attention. No difficulty need be experienced in getting breeding animals of the right stamp, as they are pretty equally distributed; but should it happen that a little trouble is necessary, it should be cheerfully undertaken. No amount of care will make up for want of breeding; and it is most unpleasant for those in attendance to be putting good food in bad skins, knowing, as they well do, that the results to their employer can never be anything but unsatisfactory. When the stock are crossed, no home-bred bull should be used on any pretence whatever, however well-looking he may be; however compact in frame, or hardy of constitution; or however well descended he may happen to be from animals of rare milking property—all should be overlooked, and the beast got rid of, as if used the stock will recede instead of progressing. Breeding from cross-bred bulls destroys uniformity; the cows become unshapely, losing the fine level back, finely sprung rib, and general squareness of body, which are so eminently the characteristics of purely-bred cattle. They are also much larger consumers of food—a consideration no one can afford to overlook—very soon after passing their prime, getting a ragged and uneven appearance, and requiring a very large amount of food to keep them at all in decent condition. At the present day there is no difficulty in procuring young Shorthorn bulls of pure descent, and at prices within the reach of men of very moderate means indeed. This blood being now so universally diffused over the kingdom, and possessed by those who have the good sense neither to pamper nor over-feed, rearing their young stock in exactly the same way as they are likely to be treated by those who purchase them for breeding purposes, a great boon has been conferred on all stock farmers of limited capital. Bulls reared in this way are not only to be had for far less money than those

which have been pampered, but they also turn out to be far more useful, being really serviceable animals for the purpose for which they are wanted, and their progeny healthy and thriving. To sum up this part of a very important and interesting subject, we consider that a better foundation, or starting point, for profitable dairy farming can scarcely be attained than that which begins with the Ayrshire cow and Shorthorn bull. In uplands, where the pasture is but indifferent, and situation exposed and unsheltered, the Shorthorn is then inadmissible, the pure Ayrshire giving more profitable results.

Treatment of the Calf.—A considerable expenditure of time, trouble, and money having been gone to in procuring good blood, the offspring becomes valuable before it has seen the light; and it therefore becomes well worth while to bestow much care on the cows during the months of gestation, removing as much as possible all disturbing influences, so that the calf may come to the world healthy and full-timed. When the breed is valuable, much loss is too frequently experienced from premature births, as from whatever cause it begins in the herd, it seldom ceases without a considerable number of the cows slinking, there being an apparent, though hitherto unexplained sympathy amongst a number of breeding cows, the conditions of whose daily life is exactly similar. Regularity of feeding, good ventilation, and abundant room, not only in the stalls, but in the width of the doors, so that there need be no crushing as they go in and out, are all excellent preventives of abortion. Musty hay or straw, more particularly barley-straw in almost any condition, given as food to in-calf cows, is provocative of slinking, and should be avoided, as also the giving of a quantity of cold roots as the first feed in the morning (frosted turnips are particularly objectionable), a little sweet hay or fresh oaten straw being safest for the morning feed, and accidents less likely to occur by such an arrangement. The calf having been brought into the world healthy, the great aim should be to keep it so, and this can in general be successfully done by providing it with comfortable quarters, and feeding moderately at regular intervals. When the disposal of dairy produce is more the object than stock-rearing, the latter being subordinate to the former, and the calf consequently intended to be brought up by hand, it should, to save trouble, be removed from the mother the moment she has licked it dry. It should not be permitted to suck even once, and the instincts of mother and offspring never having been aroused, they have no knowledge of each other, and much annoyance is thereby avoided.

Although in theory it may seem to serve several useful purposes to permit of the calf sucking its dam for a day or two, yet the trouble afterwards is so great in getting the one to let down her milk, and the other to drink out of the pail, that the good which might be expected to result from doing so becomes quite neutralised. The beastings can be quite as easily given by hand as by suckling, and are in this way quite as effectual in clearing the stomach and intestines, and establishing that healthy action so vitally necessary for the very existence of the creature so recently come into the world. When the calf has never been permitted to suck its mother there is not the slightest trouble in getting it to drink out of the pail—hunger will make it do so; whereas if it has sucked at all, it shows the greatest obstinacy in learning, and cannot be got to drink freely until a considerable time has elapsed. With the cow herself there is also some trouble, and very often positive danger from retention of the milk when she has taken kindly to the calf, and her maternal instincts thoroughly aroused. For several days she will scarcely let down her milk at all, rendering it almost impossible to milk her clean, and, from this reason alone, severe inflammation is liable to set in, resulting, not only in a great deal of temporary inconvenience, but actual monetary loss. Should the swelling become hard, and not yield to repeated and long-continued fomentation with hot water, the following mixture forms probably as good an ointment as could be used for soothing the pain, and reducing the inflammation. Camphor, 1 oz., rubbed down with a little spirits of wine, and well mixed with 1 oz. of mercurial ointment, and ½ lb. of elder ointment. This should be rubbed well in after each milking, but clean washed off with warm water before being again milked. To the owner of a large stock of cows, the above receipt is very valuable, and a few pots should be kept ready mixed for use. A number of cows in a herd with blind paps is most unsightly; besides being a pecuniary loss by injuring the milking qualities, and lessening the value of each animal so blemished when parted with; and moreover it is not creditable, and therefore the utmost care should be taken to keep down inflammation at the period of calving. If at all possible the calf-house should be subdivided, so that each little animal can have a separate compartment for itself—an arrangement which adds most materially to its comfort and progress, and through which much after trouble and many losses from death can be avoided. To give the calf a good start, and lay the foundation of a good constitution, the milk should be given undiluted and warm from the cow for the

first fortnight, the third and fourth weeks half new and half skim; afterwards the skim itself will answer admirably, and as the season advances the thickened milk does equally well. When given in sufficient quantity, coagulated milk fattens amazingly, many lots of calves so fed being fit for the butcher when turned out to shift for themselves. The most dangerous and insidious disease to which young and rapidly-thriving animals are subject is black-quarter, which, when it breaks out, very frequently commits sad havoc before it can be checked, making the loss very serious when the cattle are particularly well bred. It gives so little warning that remedial measures are usually of little avail, and therefore on those pastures liable to its periodical appearance amongst the young stock whatever can be done in the way of prevention should on no account be neglected. Dry-lying in the field is essential as a preventive, and care not to shift too suddenly from moderate keep to rich and succulent pastures, as blood-striking is almost sure to follow. A seton in the dewlap is strongly recommended by many distinguished veterinarians, and as we have ourselves often tried it, and lost none when the precaution has been used, we consider it worth while recording the mode of using it. So as to render the cord more irritating it should be made specially for the purpose, with one-half hemp and the other half horse-hair, and in substance about the thickness of ordinary fencing-wire. When thus made, the seton does not require to be rubbed with Venice turpentine or cantharides ointment, the irritation which it induces being quite enough for the purpose required. In inserting the seton a little care is necessary to avoid the blood-vessels, which can be done by taking the dewlap between the finger and thumb, and ascertaining the exact point at which the flesh terminates, underneath which the puncture should be made and the cord introduced, a couple of tight knots being put on each end to prevent its slipping out. At intervals the cords should be examined, and drawn back and forward with some degree of force to prevent clogging and assist the discharge. As we have already noticed, damp bottoms are a fruitful source of black-quarter, and according as they are rendered dry by drainage, this dire disease becomes less frequent in its attacks, and of a milder and less fatal type. In situations difficult of improvement housing by night should be resorted to very early in autumn, so as to obviate as much as possible the injurious effects of the damp soil and chilling frosty dews.

The Supply of Food.—As the cow is fed so will her produce be greater or less, profitable or otherwise, is an axiom pretty

well known to most people whose business is amongst dairy stock. Yet notwithstanding this, there cannot be a doubt in the mind of even a very superficial observer, that there are many owners of milking cattle who act as if the contrary were the case, and that it was of comparatively little importance whether the food given was up to the mark in either quantity or quality. Too frequently but little winter food is prepared, and the poor animals have to drag out a cheerless existence on whatever rough grass they may be able to gather from the pastures they occupied in summer, with the addition of a little straw or coarse hay when in the house; the modicum of turnips or mangolds grown being reserved for advanced spring, when the cows are at or near the calving. By the time they drop their calves, the cows thus treated are so reduced in condition as to render them quite unfit for giving a full season's milk, so much of the food supplied having to go to the nourishment of an enfeebled system, and to repair the waste of tissue caused by a lengthened period of semi-starvation. Now such treatment is the very reverse of the teachings of reason and common sense, as the cow being an animal than which there is none more grateful for liberal treatment, or gives a more overflowing return, arrangements should be made for an abundant supply of nourishing and succulent food during all seasons, so that each and every member of the herd shall have enough to eat every day in the year. Without full feeding no cow, however good may be her milking qualities, will remain long in full profit; therefore, keeping her on a short supply of food is just so much lost time, and loss of income to her owner. If, from unforeseen causes, food happens to be scarce at the calving season, it is better policy to sell a few of the cows and so be enabled to feed those well which are retained, than endeavour by pinching to keep all on, and endanger the entire season's produce by prematurely drying the flow of milk; a result inevitable if the food is limited at the period of calving. Nay, so important is it that there should not be the slightest approach to hunger, or even restriction, that with the money so obtained, if cash is not obtainable in any other way, it is better to purchase food, whether in the shape of grains, oil-cake, turnips or hay, and by supplementing the home-grown food stretch it so far as to give a full supply until the season has become sufficiently advanced, and it can be procured in other ways on the farm. During the summer months the pastures are of course the principal dependence for dairy stock, and on soils remarkable for fertility nothing else is required, and summer-house feeding is unknown, large-

framed splendid cattle being kept in blooming condition and in full profit on grass alone. Very different, however, is the case of the farmer who farms on a medium soil, the grass of which gets burned up when overtaken by a lengthened drought, as if he has not provided supplementary food, his cattle cannot possibly give a profitable return, falling rapidly off both in produce and condition. Growing a few successive breadths of green food to be given in the house at the morning and evening milking pays well, as it not only increases the flow of milk for the time being, but keeps it up till a much more advanced period of the season than is the case when the cows have to subsist on the pastures alone. The large quantity of manure made by the partial house-feeding system is another source of profit, as it gives the farmer the means of sustaining the fertility of his land, making it in fact self-supporting, but little money being required to be spent on fertilizers of any kind when substantial farm-yard manure of the best sort is manufactured so extensively. At one time we supposed that it was an impossibility, even with the utmost care and forethought, to provide such a regular supply as would ensure a hearty feed twice a day from the time the roots were finished in May, until again available in September; but a neighbour of our own has shown the fallacy of that idea by keeping a stock of about fifty head for the past seven or eight years without letting them into the fields even for a single night during the entire year. Tares, irrigated grass, and second-crop clover are his principal dependence for house food; and so well does he manage that he has every beast fat, from the youngest-calved heifer to the oldest cow. Winter tares sown in September are a valuable crop, giving a large amount of food, and permitting the ground to be cleared in time for a full crop of turnips. Tares have this useful property, that however succulent, they do not scour cows fed on them, and may be given fresh from the scythe without injury; indeed, there is no way they can be given so appetizing to the animals as when newly cut. They do not so much increase the flow of milk as add to its richness, and sustains it throughout the season, the butter made being firm in texture and delicious in quality. On ordinary land tares are not worth growing for cattle-feeding purposes, unless highly manured, the crop having no bulk, and moreover runs too late in the season to be of any perceptible benefit. Much of the profit of a dairy is lost by keeping the cows out in the fields at night too far into the autumn, as they are chilled by the frosty dews, and the milk prematurely dried. This course is compulsory on those who

have provided too limited a supply of food for a protracted winter, and are therefore forced to leave them out too long, and turn out in spring too early. Housing in time assists greatly to keep up the milk, and to continue it at the paying point well into the winter. It is obvious that when cows are turned out during cold wet nights in October they can little else but look for the best shelter the fences will afford, and there lie down; and a very small allowance of food given inside, will be equal to what they can collect in the fields, even when the nights are moderately fine. In October butter is getting scarce and the price rising; therefore it pays to look to the comfort of the cattle, and feed fairly both in-doors and out, if it can at all be managed, which it can be, if the necessary measures have been taken. By this kind of treatment towards the close of the season, we come to the conclusion that as much money may be made extra as to convert what otherwise would have been but a middling season into an exceedingly prosperous one. In bringing cows through the winter it is of great benefit to their health to get a run out every day for a few hours, the exercise promotes circulation, prevents swollen joints, and tends to hardiness of constitution, besides improving the quality of their produce in the case of those which are milking. When dry the winter food of the in-calf cow may with great propriety consist of a morning and evening feed of roots (carefully avoiding frosted turnips) and as much oaten-straw as she will eat. This treatment regularly kept up will bring her to the calving in fine condition, enabling her to give milk in paying quantity, rich in quality, and therefore highly productive of butter. Although farmers holding rich land look upon turnip growing for dairy stock as an expensive process, and trust more to the large crops of hay they can grow than to roots; yet the upland farmer cannot in this way afford to imitate his more fortunate neighbour in doing so. Not being able to grow on light land more than half the crop of hay that the other can with perfect ease, the article becomes to him a most expensive one, and he must make green crop his main stay, the character of his soil giving him the opportunity of doing so, and rendering roots the most economical food he can raise. When calved, hay can be substituted for straw, and the quantity of roots increased to about 100 lbs. given in three feeds, a weight of roots quite sufficient for the heaviest cow. Some attention should be given in the commencement to avoid surfeit, as serious injury to the animal may be the result of over-feeding, and in any case, if the food should be rejected for a time, the produce is liable to suffer a very serious diminution. In

early spring, while the cows are still wholly dependent on house-feeding, those newly calved are exceeding grateful for the addition of a little concentrated food, in the shape of crushed oats, meal, bran, or oilcake. When mangolds are used it is absolutely imperative to give meal or crushed oats, as milk from them alone is very thin and unproductive; and again, those roots having a decided tendency to scour, the meal acts as a corrective, and the animals are kept in good health and condition. There is a striking difference between cream from the milk of merely root-fed cows and that from cows getting corn-meal or cake in addition; the one is comparatively thin and poor, while the other is thick and rich, affording ample proof of its superiority by comparison alone, before being submitted to the conclusive test of the churn.

House Accommodation.—In the stalls provision should be made to keep up such an amount of heat as will keep the inmates comfortable, care being taken that too high a temperature is not maintained, as they will sweat and be under such a constant sense of oppression as will not only keep them uncomfortable, but prove in the end injurious to their health. From 55 to 60 degrees of night heat will promote both health and comfort, and materially aid in the production of milk, none of the food being wasted by having to restore the natural heat of the system, which is dissipated by the cold temperature in which the cattle are compelled to remain. Draughts should be carefully avoided, a newly-calved cow being highly susceptible of injury from cold currents of air; and to prevent cutting draughts there is nothing so effectual as a properly-organized system of ventilation. There should on no account be any side opening underneath the level of the occupants of the stall, a mistake too often made, and the fruitful cause of much mischief. A series of minute openings, easily made in the building of the wall by the insertion of hollow bricks or even drain pipes of small bore, should extend the whole length of the building for the admission of fresh air, the outflow of that which has become vitiated being provided for by ventilators placed along the ridge of the roof, or by raising the top row of slates a few inches, which can be easily done, looks well, and answers the purpose admirably. In the division of the stalls, perfection appears to us to have been reached by the different manufacturers in iron, who make stable and cow-stall fitting a portion of their business, their models being exceedingly worthy of inspection and study by those who are about to build or remodel. They almost, without exception, combine security of fastening with safety to the

animals, comfortable standing room, and excellent facility for preserving the bed clean and dry. Being rather expensive they are almost out of the reach of ordinary tenant-farmers, but with cheaper materials the style could be kept sufficiently well in view to serve the purpose.

(*To be continued.*)

ON BEET-ROOT PULP.

By Dr. Augustus Voelcker.

In manufactories of beet-root sugar the roots, after having been topped and tailed, are thoroughly washed with cold water, and then passed through a grating machine, driven by steam power, which reduces them to a fine pulp. This pulp, with the addition of a little water, is next placed into woollen bags; a number of these, separated from each other by thin plates of sheet iron, are placed under presses in piles, and submitted to a gradually increasing strong pressure. There are other plans of extracting the sugary juice from beet-root, but in most manufactories of beet-root sugar the juice is extracted by pressure of the grated roots. The residue left in the bags after pressure, or the fibrous portion of the roots, is the refuse which, under the name of beet-root pulp, is used extensively on the continent for feeding purposes. Beet-root pulp is much valued in Belgium, France, and Germany, for its fattening properties. In several places in Belgium, recently visited by myself and Mr. Jenkins, we saw fattening beasts kept almost exclusively upon beet-root pulp; although the beasts at the time of our visit were not in a fat condition, they were evidently doing well upon that food.

The manufacture of beet-root sugar, most readers are aware, has recently been taken in hand in England with a fair chance of ultimate success. There is every likelihood that in another year Silesian sugar-beet will be grown much more largely than in the past, and probably at no very distant period beet-root sugar manufactories will spring up in various parts of England, and the refuse pulp be placed at the command of the stock-feeder in abundance. For this reason it seemed to me desirable to make an inquiry into the composition of beet-root pulp, and to place before the readers of the journal the results, which I trust will enable them to form a correct view of the nutritive properties of beet-root pulp, and the uses to which it may be applied.

The material from which the subjoined analysis was made

was obtained from Mr. James Duncan's beet-root sugar manufactory at Lavenham.

The pulp here made is sold to the farmers, who supply the roots at the rate of 12*s.* per ton. The pulp is tolerably dry, and is greyish-white in appearance. It has, when fresh, a rather insipid, or but slightly sweet taste, and rapidly turns faintly acid on keeping. The pulp is obtained at the manufactory in the form of thin press-cakes, which can be readily broken in pieces and mixed without difficulty with straw-chaff, meal, and such like materials.

In its natural state the pulp contains from 70 to 72 per cent. of moisture, and thus it embodies a much larger per centage of solid feeding matter than the roots from which it is obtained, and still more than ordinary mangolds, in which the proportion of water amounts on an average to about 88 per cent.

On submitting the Lavenham refuse pulp to a detailed analysis I obtained the following results:

Composition of Beet-root Pulp from Lavenham.

Moisture	70·11
*Albuminous compounds (flesh-forming matters)	2·25
Sugar	3·39
Mucilage and pectinous compounds	1·93
Digestible cellular fibre	15·13
Woody fibre (cellulose)	5·32
Mineral matter (ash)	1·87
	100·00
* Containing nitrogen	·361

We learn from the preceding analytical results—

1. That this pulp contains, in round numbers, 30 per cent. of dry feeding matter.
2. That an appreciable amount of sugar is retained in the pulp.

More sugar probably was left in this residue than is usual, owing to the circumstance that the roots were rather flabby when they were worked up for sugar, and in that condition could not be grated so thoroughly as fresher beets, and the juice in consequence could not be squeezed out so completely as from more perfectly rasped beets.

3. That a large proportion of the fibre is readily digestible; and
4. That beet-root pulp contains a considerable proportion of albuminous or flesh-forming matters.

The next analysis was made from a specimen of French pulp, which yielded the following results:

Composition of a Specimen of Beet-root Pulp produced in France.

Moisture	70·88
*Albuminous compounds (flesh-forming matters)	2·38
Mucilage, pectinous compounds, and a little sugar	6·59
Crude cellular fibre	16·43
Mineral matter (ash)	3·72
	100·00
* Containing nitrogen	·382

It will be seen that the French pulp resembled closely in composition the English specimen. Both contained about the same percentages of water and of flesh-forming compounds, and both may be regarded as equally useful for feeding purposes.

In a second specimen of French pulp, which evidently had been kept for a considerable length of time in an unsheltered place, I found a good deal more water, as will be seen by the subjoined analysis :

Composition of Second Specimen of French Beet-root Pulp.

Moisture	77·10
*Albuminous compounds (flesh-forming matters)	1·93
Mucilage, pectinous compounds, and a little sugar	1·19
Lactic acid	1·12
Crude cellular fibre	16·07
Mineral matter (ash)	2·59
	100·00
* Containing nitrogen	·39

This refuse pulp thus contained nearly 7 per cent. more water than the preceding one. Its taste was strongly acid, and on examination I found that the sour taste was due to lactic acid, of which the pulp contained fully 1 per cent.

When beet-root pulp is kept for any length of time it turns decidedly acid, and in that state is quite as much relished by cattle and sheep as when fresh. Practical feeders with whom I came in contact maintain that old pulp is superior to new for fattening purposes. Be this as it may, the lactic acid which is generated during the time of keeping certainly has the effect of preserving the feeding qualities of the pulp and of rendering it more digestible.

Except in its more acid taste old pulp differs but slightly in its appearance and general characters from new. The plan of preserving beet-root pulp in a good condition for feeding purposes is extremely simple. All that is necessary is to dig a trench in the earth, to place in it the pulp, and to pile it up in the same way as a heap of mangolds or swedes, and to cover the heaps with the earth from the trench. In this way the residue may be kept for years in a good condition.

On the occasion of our journey to Belgium I brought home with me a sample of old pitted pulp which had been kept for about one year, and submitted it to a general analysis. When it was analysed it yielded 61·74 per cent. of water; but as it no doubt lost some water on the road, it will be more appropriate to represent its composition in the same state of moisture as the specimen of English pulp, which, in round numbers, contained 70 per cent. of water.

This specimen of old Belgium pulp accordingly had the following composition:

Composition of Belgium Beet-root Pulp, one year old.

Moisture	70·00
*Albuminous compounds (flesh-forming matters) . .	2·43
Digestible fibre, pectinous compounds, &c. . .	18·67
Woody fibre (cellulose)	6·48
Mineral matter (ash)	2·42
	100·00
* Containing nitrogen . . .	·39

Like all old pulp, it contained a sufficient amount of lactic acid to give it a strongly acid taste.

In all other respects the Belgium pulp did not differ materially in quality from the specimen of English pulp, the analysis of which is given above.

Some years ago I published in this journal two analyses of the pulp from common mangold-wurzel, which was obtained as a residue in the distillation of spirit from mangolds. One of the distillery pulps yielded 90·78 per cent., and the other 91·84 per cent. of water, and both were much inferior in nutritive properties to the residual pulp from beet-root sugar manufactories. In preparing spirit from beets, the soluble constituents are more thoroughly removed than in sugar factories, and, in consequence, distillery pulp has not the same feeding value as the pulp from beet-root sugar works.

In the opinion of several French authorities beet-root pulp is equal, if not superior, in nutritive properties to the roots from which it is obtained. On the other hand, there are many persons who doubt the correctness of this view, because in the presses of the sugar manufacturer the sugar, which is the most fattening constituent of the roots, passes almost entirely into the juice, and is lost to the pulp. Beets without the sugar, it is said, surely cannot be so fattening as with it. This is self-evident; however, the statement that pulp is more nutritious than the roots from which it is obtained as a refuse, does not imply that a ton of sugar-beets is less nutritious than a ton of the same roots minus the expressed sugary juice, but it means that weight for weight beet-root pulp is

equal, if not superior, in feeding properties, to common mangolds or to sugar-beets. The advocates of the view which ascribes a very high nutritive value to pulp are very confident of the correctness of their statements, which they say are the result of their practical experience in feeding cattle upon pulp. As far as I know, however, there exist no records of any trustworthy practical feeding experiments, from which might be gathered what is the real comparative nutritive nature of pulp, and the roots from which it is obtained.

In the absence of such direct experiments, which would give us the most satisfactory information on this subject, the analyses of common mangolds, sugar-beets, and pulp, supply us with data which will enable us, if I am not mistaken, to form a tolerably correct opinion with respect to the value of these three articles of food.

In making comparisons between vegetable products, such as roots or different kinds of green food, it is well to remember that their composition as well as their nutritive value varies exceedingly. Soil, climate, the character of the season, the manures employed, and a variety of similar circumstances, it is well known, greatly affect both the quantity and the quality of the produce. For this reason we should be on our guard when we compare the nutritive value of different kinds of roots, and not make more of such comparisons than they deserve. By singling out exceptional cases, and using them for special purposes, many well-established facts might readily be disproved. Proceeding in this way I should find no difficulty in proving that mangolds are no better than common turnips, for I have more than once analysed ordinary turnips which contained less water and more sugar, and other solid feeding materials, than mangolds grown in an unfavorable season. Again, I have analysed swedes which were superior to mangolds, and mangolds which were more nutritious than swedes, and might prove by isolated instances either the superiority of the one or the other.

In all comparisons of that kind care should be taken to avoid extremes, and fairly to represent the average composition of the materials under discussion. It may not always be easy to do so, and I experienced the difficulty in endeavouring to draw up figures which may be regarded as fairly representing the average quality of common mangolds and Silesian sugar-beets, both grown in this country. The following tabular statement, however, I believe represents correctly, and in round numbers, the composition of English common mangolds and sugar-beets of fair average quality:

Composition of Common Mangold and Silesian Sugar-beets of fair average quality grown in England.

	Common Mangold.	Silesian Sugar beets.
Water	89·0	84·5
Sugar	5·5	9·5
*Albuminous compounds (flesh-forming matters)	1·5	1·5
Crude fibre	3·0	3·5
Mineral matter (ash)	1·0	1·0
	100·0	100·0
* Containing nitrogen	·24	·24

Speaking generally, the Silesian sugar-beets grown in this country contain the same amount of nitrogenous compounds and mineral matters as ordinary mangolds, and from 4½ to 5 per cent. less water, and nearly double the amount of sugar which is found in common mangolds. The average percentage of dry matter in sugar-beets is 15·5, and in common mangolds 11. A ton of the former, therefore, contains 347 lbs. of dry feeding substance, in round numbers, and a ton of the latter only 246½ lbs. Allowing only little for the superiority of sugar as a fattening element of roots, the case is far from over-stated if 1 ton of English sugar-beets is considered as equivalent in nutritive properties to at least 1½ ton of common mangolds. In the next place, let us compare the preceding analyses with the average comparison of the refuse pulp from beet-root sugar manufactories. In round numbers this may be stated with sufficient accuracy as follows:

Average Composition of Beet-root Pulp (Refuse Pulp of Sugar Manufactories).

Water	70 0
Sugar	1·5
*Albuminous compounds (flesh-forming matters)	2·5
Crude fibres and a little lactic acid	24 0
Mineral matter (ash)	2·0
	100·0
*Containing nitrogen	·40

In 100 parts of pulp it will be seen there are 30 per cent. of dry matter, whereas 100 of sugar-beet from which it is obtained contain only 15½ parts of dry substance, and common mangolds but 11 parts.

A ton of beet-root pulp accordingly contains 672 lbs. of dry matter, or 325 lbs. more than a corresponding weight of

the roots, and 425½ more dry matter than 1 ton of common mangolds. In other words, 1 ton of pulp contains not quite, but nearly, the same amount of solid substances as 2 tons of Silesian sugar-beets, or 3 tons of common mangolds.

Nobody probably will dispute the fact that the dry substance of a sugar-beet or a mangold is more valuable for feeding and fattening purposes than the dry substance of the pulp. The question, however, which requires to be settled is, not whether the perfectly dry pulp is less valuable than perfectly dry roots from which it is made, but whether the 672 lbs. of solid matter contained in a ton of pulp are worth more or less than the 347 lbs. of solid matter present in a ton of sugar-beets, or 246½ lbs. of the solid matter of which common mangolds consists.

A further comparison of the preceding analyses shows that, weight for weight, the pulp contains more albuminous (flesh-forming) matter, much more fibre, and but little sugar. On the one hand we have in sugar-beets an excess of 8 per cent. of sugar, and in common mangolds an excess of 4 per cent. over the amount of sugar in the pulp; and, on the other hand, we have 24 per cent. of fibre in the pulp against 3½ in beets, or 3 per cent. in common mangolds, besides an excess of 1 per cent. of albuminous matter in the pulp.

The question thus resolves itself into this: are 4 lbs of sugar (the excess in 100 to common mangolds), or 8 lbs. of sugar (the excess in 100 lbs. of sugar-beets), worth more or less than 1 lb. of albuminous or flesh-forming matter and 20½ lbs. or or 21 lbs. of the finely grated fibre, which constitute the excess in 100 lbs. of the pulp.

As the difference in the amount of nitrogenous matter in the pulp and in the roots is comparatively small, we need not lay any stress upon the excess of albuminous matter in the pulp, and for simplicity's sake may throw it together with the excess of fibre. We thus obtain in every 100 lbs. of pulp 21½ lbs. more of the solid matter of which the pulp mainly consists than we give to cattle if we fed them upon the same quantity of sliced beet-roots; but against this a set-off has to be made in the excess of 8 lbs. of sugar in the beets, or 4 lbs. when compared with common mangolds.

There can be no doubt that 1 lb. of sugar is worth more as a fattening material than 1 lb. of the vegetable fibre which constitutes the bulk of the beet-root pulp. Whether 8 lbs. of sugar are worth as much as 21½ lbs. of crude fibre, we question very much, and have no hesitation in subscribing to the opinion that 22 lbs. of the fibre go further in supplying food than 4 lbs. of sugar. In support of this view of the matter

it may be stated that neither common mangolds nor Silesian sugar-beets are ever left in the ground until they become over-ripe, which would have the effect of changing the soft and delicate fibre which forms the cellular and vascular tissues of the bulbs into hard and indigestible woody matter; and it may be further mentioned that the young and tender cellular fibre of sugar-beets, when digested with weak alkalies, and with dilute acids, is quickly transformed into sugar. There can, therefore, be no reasonable doubt that the gastric juice and other secretions in the alimentary canal of ruminating animals, more especially, will render available for the purposes of nutrition or deposition of fat a very large proportion of the soft and finely comminuted fibre of which the pulp mainly consists.

Taking all circumstances into consideration, I am inclined to think that accurate feeding experiments probably will prove that a ton of fresh beet-root pulp, as it comes from the presses, or old pulp not containing more water than fresh, is worth as much for feeding purposes as $1\frac{1}{2}$ tons of the roots from which it is obtained, or as much as 2 tons of common mangolds. I speak, of course, with reservation; still, I think the preceding analytical data, and the considerations which have been laid before the reader, justify the assertion that, weight for weight, beet-root pulp, containing not more than 70 or 72 per cent. of water, is more valuable for feeding purposes than common mangolds, and even sugar-beets.

In Belgium fattening beasts are sometimes fed upon nothing else but the refuse pulp of sugar manufactories. Considering the state in which stock is usually sold to the butcher in that country, it may answer the purpose of the manufacturer, who frequently keeps a number of fattening beasts, to dispose of his refuse pulp in this way; but for the requirements of the English meat market I believe it would not be possible to get fattening beasts in a sufficiently good condition by feeding them exclusively upon pulp.

Beet-root pulp is rather deficient in flesh-forming compounds, and hence the admixture of some meal or cake to pulp suggests itself as appropriate for supplying this deficiency. Cotton-cake, in particular, can be strongly recommended as an additional food for beasts fed upon pulp, for it not only makes up for the deficiency of flesh-forming matters in the pulp, but its binding properties are particularly useful in counteracting the tendency of the pulp to scour.

Milch-cows may also be fed with advantage upon pulp and bean-meal, or pulp and cotton-cake. Indeed, a fair allowance of bean-meal or cotton-cake, and as much pulp as the

cows will eat, produces both abundance of milk and milk of good quality.

Pigs are fond of old pulp, and they do well upon it if they receive at the same time barley- or pea-meal, or a mixture of both meals.

Beet-root pulp, selling at 12*s.* a ton, unquestionably is a cheap and valuable food, which may be used as a good substitute for roots. At that price, and even at a somewhat higher figure, I doubt not the refuse pulp of sugar manufactories will always command a ready sale in England.—*Journal of the Royal Agricultural Society of England,* 1870.

TURNING HORSES OUT TO GRASS.

To the Editor of the Times.

Sir,—Some time since you did me the honour to insert in *The Times* a letter on "Watering Horses," and it is to be hoped that it has had the effect of inducing a more liberal allowance to those animals.

"Turning out to grass" is a subject of scarcely less importance; and the popular belief that the horse is benefited by a "month's run" is a fallacy that needs exposure.

Now that the pastures are beginning to look green, and the weather promises to become warm, owners are thinking of giving their horses a treat by turning them out to grass. "I have worked my horses hard," say they, "and they need a summer's run. It will rest their legs and feet; besides green food is the natural provender for horses, and they will enjoy a few months' rest at grass and be all the better for it." This is a very general impression, but in its application to worn or used horses nothing can be more erroneous.

It is all very well for the young animal, protected by long hair, lengthy mane and tail, whose time while young has to be got over one way or another, and it is found convenient to let him forage for himself. But with stale and "groggy" horses requiring rest, and whose owners turn them out with this object, the matter is entirely different. "Rest," properly so called, is not to be had in the pasture.

In the simple process of gathering his food the horse walks many miles during the twenty-four hours if the pasture be bare, and the same process obliges him to throw extra weight on his fore legs and feet, which it has been the intention of the owner to "rest."

What rest has a horse or any other animal with a fine coat and sensitive skin when even a single fly is crawling over it? Witness in the summer months the myriads of insects which surround all cattle when grazing, and watch the poor horses huddled together for shelter under trees or hedgerows, nervously tossing their heads, switching the tail, stamping, and thus jarring the legs and feet, moving to and fro in the vain hope of escape from their tormentors, and then ask if this be "rest?"

When the sun is powerful the feet become hot and parched, the horn is rendered brittle and breaks off in pieces. Besides, nothing throws a horse so soon out of condition as green food. The consequence in eight cases out of ten is that the animal comes out from grass in much worse form than when turned out to "rest"—if he escape getting staked, or being kicked by his companions.

It is said, and I believe truly, that no hunter is in condition before he is seven years old; which means that he has had three years' hard keep and moderate work.

The summering of hunters is now an altogether different matter from what it was formerly. If properly treated, the hunter will at most be allowed a small quantity of green food as *bonne bouche*, for a week or so. This is gathered for him, is eaten in his box or in the yard attached, and his usual feeds of corn are not lessened.

What, then, is the best method of dealing with horses in the summer, when either rest is a necessity or otherwise desirable?

Put them into a loose box or shed, well littered with tan, bark, sawdust, or straw, or all combined; remove the shoes, and rasp off the sharp edges of the crust to prevent them breaking; supply water without a stint; give liberal allowance of oats, Indian corn, and bran, with cut chaff and hay, the whole of which will be the better for being made damp with water.

If on the part of the owner there is a predilection for green food, give it in small quantities mixed by hand with the hay, always remembering that the fat which it invariably produces is so much lumber, not condition, and that when the horse returns to work the fat is thrown off at the cost of additional wear in the feet and legs.

I am, Sir, your obedient servant,

B. CARTLEDGE, Member of the Royal College of Veterinary Surgeons.

Sheffield, *May* 9.

TURNING HORSES OUT TO GRASS.

To the Editor of the Times.

Sir,—For the information of those who are yet undecided on the point, may I ask the favour of your giving publicity to an opinion, based on long practical experience, tending to a directly contrary conclusion to that of Mr. Cartledge, of Sheffield? I have kept horses all my life, and not being a rich man, have always found it convenient to summer my hunters at grass, and to rest and freshen up my hacks in the same manner, giving for the last six weeks while in the field a feed of split beans daily, and I have invariably found within a few weeks after getting their coats off the animals are quite fit to go and wonderfully freshened and improved by the summer's run, the flesh very soon becoming hard and well-conditioned, and with no perceptible injury from the flies, hot sun, or other imaginary dangers suggested by your correspondent.

I am fully persuaded, too, that horses are much more liable to be injured in their wind when confined in a shed or box without exercise and "liberally fed on oats, Indian corn, bran, hay, and chaff," than when roaming at pleasure, treading in the late and early dews, and feeding on the succulent grasses provided by nature—plenty of shade and good water being, of course, a *sine quâ non* under the system I advocate.

Yours faithfully,

F. Bullock Webster.

Binfield Court, Berkshire, *May* 18.

THE PEDIGREE OF THE HORSE.

A remarkable lecture was recently given at the Royal Institution by Professor Huxley on the "Pedigree of the Horse." A very large and distinguished audience listened to this exposition. The professor opened his lecture by some observations on the Darwin theory, remarking that the principle of natural selection, though it was a repressed doctrine ten years ago, had now established itself, and was rapidly making way, and in future would be known as one of the greatest discoveries of the nineteenth century. Coming to the animal in question, Professor Huxley observed, that all animals and things which were very accurately and delicately

balanced, were apt to be very beautiful. On the same principle the beauty of the body of the horse probably has much to do with its being one of the best possible pieces of apparatus for running swiftly along the land. In many respects the organization of the horse departed in an extraordinary way from what may be called "the average quadruped," and the peculiarities to which he desired to call special attention were those of the fore limbs, the hind limbs, and the teeth. What was called the "knee" of the horse was in reality the wrist of the animal. Human beings had two bones in the forearm, and this was also the case with most quadrupeds, but in the horse these two bones were completely fused and bound together into one. In most horses and asses the two bones were soldered together, and the shaft of the ulna nearly disappeared. The horse's hoof answered to the fingers of the human hand, only in the hoof some of the bones and fingers of the hand were missing, and the horse in reality rests upon the end of the nail of the middle finger. What has become of the other fingers? Two of them were taken away, and two of the other bones were reduced to little splints, which could be seen from the outside of the horse's foot. This peculiarity was found only in these animals. In the hind legs of the horse the small bone was reduced as in the fore legs, and the middle toe was there with its nail made into a hoof. Sometimes horses were born with extra toes, and there was a specimen of this kind in the museum of the College of Surgeons. At the present time also there was a South American pony in the Victoria Docks with an extra toe to each hoof, and the toes could be felt by the finger. If these facts were interpreted by the doctrine of evolution, what did it say? It said that the ancestors of the horse must at one time have had the leg and foot bones complete, although these were blotted out before the horse was turned into a perfect running machine. On going back to the upper miocene period—a time when the world altogether differed from its present condition as regarded its geographical features—the horse was still found with all its present peculiarities, and the two differ from each other only in minute details. But side by side with the remains of the horse in this deposit were the remains of another horse-like creature, called the "hipparion," or "little horse." As much was known about the hipparion as about the horse. There was no break in the series of time, for both are found in the same deposit. In the fore limb of the hipparion the leg bones were united, but the extra one was traceable, and the leg bones were nearer to the average type; the animal also had two

little hoofs or fingers, one on each side of the main hoof, but they appeared to have been of no use whatever. The tooth was still very horsey, but it was changed nearer to the ordinary type. There was therefore, in the upper miocene, an animal which resembles the horse in some particulars, and departs from it in others. Professor Huxley continued: Did the horse succeed the hipparion? Was it conceivable that the one animal was struck out of existence altogether, and that the other was then created afresh out of nothing? Was it thinkable? If so, he might as well give up his theory altogether. Having proceeded thus far, the investigator turns with considerable confidence to his geological remains to look for the hypothetical ancestor of the hipparion. The ancestor was found in the anchitherium, and its remains were found in the lower miocene, but not in the upper as yet, so that there is a greater gap between the anchitherium and the hipparion than between the latter and the horse. In the anchitherium the leg bones are still more separated; it has three toes in the fore limb, the two outside ones being half as big as the middle toe, so that the foot somewhat resembles that of the tapir. This animal, therefore, has the fore foot which theory requires that it should have. In the hind leg the bones are more divided than in the case of the hipparion, the hinder feet have three toes, and the teeth have not the plasticity of those of the horse, but approach more nearly to those of the ordinary type. Thus in these three animals there are proofs of gradual progression in teeth, hind legs, and fore legs, all the rest of the organization of each being horse-like. He submitted, then, that these animals fulfilled the conditions which he laid down at the beginning of his lecture, and that it was impossible to obtain evidence more complete in kind than this of the pedigree and origin of the horse. He concluded by remarking that, if Darwin's doctrine is made out in this one case of the horse, it is strong evidence that similar modifications have taken place in all cases.—*Chamber of Agriculture Journal and Farmers' Chronicle,* April 18.

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

INFLUENCE OF COMMON SALT (CHLORIDE OF SODIUM) ON THE ABSORPTION, BY THE ANIMAL ECONOMY, OF THE TRIBASIC PHOSPHATE OF LIME.

By MM. Zerbeline and Dorogoff, of St. Petersburgh.

To resolve the question of the influence of common salt on the absorption of phosphate of lime in the animal economy, it was necessary to determine at first the quantity eliminated by the rectum and urinary organs under the influence of the salt, and also in the case of the total absence of it in the food.

Dogs were taken for the subjects of these experiments. They were fed exclusively on caseine, which contained tribasic phosphate of lime, and which, beyond this salt and the water, contained no trace of chloride or other soluble substances belonging to milk. Every day, at the same hour, the dog received a certain amount of caseine, and through a tube a quantity of distilled water, measured and of even temperature, was introduced into the stomach. The quantity of distilled water was varied in proportion to the quantity of water contained in caseine; in this way the dog received every day an equal quantity of caseine and water. All these experiments gave the same results.

The method of the experimentation was as follows:—For the first seven days the dog received the caseine and the distilled water, and no salt; the seven following days the dog received the same quantity of caseine and distilled water, plus 0·200 gr. per diem of common salt. In the first seven days the dog ate 700 gr. of caseine containing 8·608 gr. of phosphate of lime; in the last seven days the dog also ate 700 gr. of caseine, which contained 7·232 gr. of phosphate of lime.

During the first seven days there was eliminated per rectum 11·556 gr. of phosphate of lime, and by the urine 0·114 gr. In the last seven days per rectum 6·873 gr., and by the urine 0·140 gr. Consequent on the absence of salt in the aliments, there was eliminated per rectum 2·888 gr. more of phosphate of lime than had been introduced into the stomach, and per rectum and urinary organs together 3·002 more than was introduced into the stomach; on the contrary, under the influence of salt, 0·359 gr. less were eliminated per rectum, and by the urinary organs and rectum together 0·219 gr. less than had been introduced into the stomach.

In the further course of this experiment, in the first ten days the same dog received the casein and distilled water without the addition of salt; the twelve following days it received the same amount of caseine and distilled water daily, to which common salt was added, in increasing doses from 0·100 gr. to 0·200 gr. daily; finally, during a further period of twelve days the dog received the same quantity of caseine and distilled water daily without salt. The dog took in the caseine, in the first ten days, 8·363 gr. phosphate of lime, during the twelve following days 10·381 gr., and during the last 10·843 gr.

The ten days the dog lost per rectum 8·445 gr., and by the urine 0·536 gr. phosphate of lime; the twelve following days, under the influence of salt, the loss was per rectum 7·925 gr., by the urine 0·420 gr.; and in the last twelve days he lost per rectum 10·726 gr., and by the urine 0·119 gr.

Consequently, in the ten days during which the animal did not receive any salt in the aliment it lost per rectum 0·082 gr. more phosphate of lime than was received in the aliments, and in the urine and by rectum together 0·618 gr. more; during the following twelve days, under the influence of the salt, the loss per rectum was 2·456 gr. less than received in the aliment, and by the urine and rectum together 2·036 gr.; and during the last twelve days, that is, under the complete absence of salt in the aliments, the loss was only, per rectum, 0·117 gr. less than received, and by the urine and rectum together only 0·002 gr. of phosphate of lime.

The experiments described, as well as several others performed in the same way, show that the phosphate of lime introduced into the stomach with the caseine is absorbed by the organism in a larger quantity without salt than in case where the aliments contain salt.

To ascertain whether the quantity of phosphate of lime varied in the blood during the investigation, the following experiment was made:—The blood of a dog, which during the space of eighteen days had taken nothing except caseine and distilled water, gave 0·034 per 100 of lime; the blood of the same dog, after having been kept for eighteen days on caseine and distilled water, with the addition of 0·500 gr. of salt daily, gave 0·057 of lime.

It is thus shown that the quantity of lime in the blood increases under the influence of the salt.

From these results the natural question is—Does the presence of common salt increase the amount of lime in the bones? To resolve this question a series of experiments were undertaken, the results of which were as follows:

A double section was made in the radii of two dogs, and a piece of bone taken out of each; the wounds were closed by sutures. After the operation they were kept for twenty-five days. One of these dogs received nothing but caseine and distilled water; the other received the same, with the addition of salt. On examination after the twenty-five days, it was found that the piece of bone extracted from the dog that had taken the salt was completely restored, while that in the dog which had not received any salt showed no trace of the formation of bone.

The two radii are preserved in the Laboratory of the Academy of Medicine in St. Petersburgh.

[Does not this indicate the benefit of common salt in all fractures, and in cases where the formation of bone might be deemed an advantage?—TRANSLATOR.]

NOURRITURE DES CHEVAUX DE TRAVAIL.

THIS is the title of a little work by J. H. Magne, Director of the Imperial Veterinary School at Alfort, on the food of working horses. The author observes, that to determine the equivalent of nutritive matter in vegetable aliments, those principles must be studied, which play an important part in nutrition, and vary in quantity in the different aliments; viz. the *nitrogenous* (azotés), also designated the *albuminoïd*, fibrine, gluten, caseine, legumine, &c.

The *fatty matter* (corps gras), oils, essences, resin, &c. The *neutral solubles*, designated also the *saccharoïds*, sugar, glucose, feculen, gumen, &c. The author does not deem it necessary to make a particular study of the *insoluble principle* of vegetables, the ligneous and cellulous, nor of the *mineral*, though they are necessary, the first to fill out (lester les animaux) and the others to constitute the organs. The first are supplied by the fibrinous aliments. When the ration contains even but a small quantity of hay and straw, it will suffice; as to the mineral matter their value is principally in the phosphates which they contain, and it is in the grain principally they are found in the greatest abundance. The plastics, the same as the nitrogenous elements, are in proportion to the latter; thus a ration rich in albuminoids will also contain the most mineral principles. The *nitrogenous or albumenoids* are nearly composed as follows:

Carbon	54	Oxygen	24
Hydrogen	7	Nitrogen	16

They contribute in the formation and maintaining of the viscera, glands, muscles, bones, &c. They also repair the loss sustained by the liver, the epidermis, epithelium, mucus, caseine, &c. Justly called *plastics*, they represent in some way the metal by which a machine is repaired.

The *fatty and saccharine matters*, also called *neuter*, are exclusively composed of carbon, oxygen, and hydrogen; chemists and physiologists group them under the name of *respiratory elements*, *thermogen*, or *dynamogen*, because, by the combination of their carbon and hydrogen with the oxygen, they produce the animal heat. The composition of the *saccharines* is nearly as follows:

Carbon	42	Water	58

All *fatty matters* (*corps gros*) are formed of a great quantity of carbon and hydrogen; some even contain no oxygen; according to M. Boussingault, oil and fat, whatever their origin, contain

Carbon	79	Hydrogen	11	Oxygen	10

As aliment the animals cannot take them without inconvenience, their composition being that of all the fatty matter contained in the food; admitting that 10 per cent. of oxygen combine with 1·25 of hydrogen, and form water, 9·75 of the latter would be set free, so that the thermogen value of the fatty matter may be represented by 79 of carbon and 9·75 of hydrogen. We will not follow the author in the minute calculation of the quantity of carbon and of hydrogen which is necessary to produce by combustion one inch of caloric. He resumes, by stating, that

100	parts of	saccharoids contain	42·0	of carbon.
100	„	fatty matter „	120·5	„
100	„	albuminoïd „	16·0	of nitrogen.

Consequently, 100 parts of nitrogen represent 625 of albuminoïds.

In 1856 (the author states), when the third edition of his general hygiene was in print, he was led to make researches into the effects produced by the economical rations so much tried at that time; he found that the nitrogenous principles had not the importance in the food of working horses that had so long been attributed to them, and that it was necessary to furnish to these animals aliments rich in the hydrocarbonous elements; he observed, that all rations containing in relation to the plastic principle a less amount of fatty matter than is contained in meadow hay and oats, did not keep horses in good condition which have to perform work attended with

rapid motion. In consequence, the author considers meadow hay and oats as the type of aliments, as they contain a suitable proportion of the principles necessary for the alimentation of the horse, *i. e.*, at least 324 to 330 parts of fatty matter to 625 of albuminoïds, or nitrogenous matter, that being indispensible preparation for the condition of the horse destined for hard work. Not having to fix the quantity of food to be given, but merely to appreciate the effect in accordance with its composition, no account is taken of the *neutrals*, which are nearly in equal proportion in all the aliments which are sometimes substituted one for the other, while in some grain the fatty matter is three times as much as in others. The quality of nutritious matter in the food is to be estimated in accordance with the proportion of the carbon and nitrogen it contains.

The caloric in animals being formed by the burning of the combustible matter in the aliments with the oxygen, and the fact being that more or less is produced in accordance with their composition, it is therefore necessary to give to hard working horses food containing a certain quantity of carbon, which is proved by the quantity of water and carbonic acid exhaled, and the quantity of oxygen consumed during violent exercise.

Experience demonstrates that the production of carbonic acid, and the absorption of oxygen, are in proportion to the activity of the organs of respiration, and that they are increased by the rapidity of the motion when at work. The number of respirations in the horse when in repose being from 12 to 16 per minute, increase to 40—50 and more when put to a rapid trot.

According to Lassaigne, a horse expires in an hour 341·69 gr. of carbonic acid, and 745 gr. after 15 minutes' exercise. In the first case, 93·38 gr. of carbon are burnt, in the second 203·63 gr. per second. Lavoisier observed that a man, who absorbs 24 litres of oxygen in an hour when in a state of repose, absorbs 63 during exercise. The same experiments have been repeated on man and animals in our time with the same results.

The alimentary value of the non-nitrogenous substances has been long ignored, in consequence of the experience of Magendie, which led him to consider their principles as non-nutritive. Their utility is however evident when we compare by experiments the different aliments, their chemical composition, and their effects on the animals.

As far back as 1841, the commission on the *hygien-hippie*, in the experiments on the alimentation of cavalry horses,

found that oats and straw were the best aliments for horses, after which came barley and rye; that oats and straw in less quantity than hay would keep horses in better condition and greater vigour. The commission found that the aliments rich in carbon in proportion to the nitrogen were the best; but competent physiologists, preoccupied with the results of the experiments of Magendie, were persuaded that the nutritive qualities of aliments were in proportion to their richness in nitrogen.

The importance of the neutral bodies is not ignored as productors of caloric; but it must be borne in mind that these bodies, to 42 of carbon contain 28 of water, while in 120·5 of, or its combustible equivalent in fatty matter, hardly any water is contained. Is it not to this composition of the neutral bodies that the weakness, the disposition to sweat in horses which are fed on potatoes, and even on barley and rye, are to be attributed? In hay and oats, which the author considers as the type of the aliments, the carbon of the respiratory elements is to the nitrogen in the hay as 2020 to 100, in the oats as 1919 to 100. An aliment to suffice to the wants of a working horse must at least contain that amount of carbon in proportion to its nitrogen; moreover, if we wish to obtain all the available force and speed their organization is capable of, this carbon must be furnished by food in which this combustible is concentrated, as, for instance, in hay and oats, which are distinguished for the quantity of fatty matter they contain.

What are the effects produced by either an excess of the plastic, or the respiratory principles in the food?

The plastic being principally the element of construction when the animal has completed its growth, and it is not required for the production of milk, fœtus, sperm, &c., it has but a limited use, viz., that of the reconstruction of the organs allotted to it; taken in excess it circulates in the blood and modifies its properties.

The respiratory principles, on the contrary, being elements of consumption, are constantly required in great quantity.

When taken beyond the requirements, or the wants of the animal, they are deposited in a proper tissue for their reception without causing any unfavorable result or functional derangement. There is no doubt of the great advantage in using up all the carbon and hydrogen in the food, by work or exercise; but if these bodies are not immediately consumed by combustion, they remain in reserve in the shape of fat, to serve for the respiration in cases of insufficient nutriment.

Meadow hay and oats, taken as the type aliments for the horse, are best adapted for his organisation; when judiciously administered keep him in good condition and vigour. The composition of the hay is as follows:

In 100 parts.

Albuminoids	7·20	Phosphoric acid	0·40
Saccharoids	44·40	Mineral substances	7·20
Fatty matter	3·80	Water	13·00
Ligneous, &c.	24·40		

Oats:

Albuminoids	10·60	Phosphoric acid	0·58
Saccharoids	61·90	Mineral substances	3·32
Fatty matter	5·50	Water	14·00
Ligneous and cellulous	4·10		

If the plastic elements were reduced into their nitrogen and the respiratory into their carbon (including the hydrogen represented by its equivalent of caloric) the result would be in 100 1·15 of nitrogen, 23·23 of carbon in hay, and 1·70 of nitrogen and 32·63 of carbon in oats, which gives a proportion of 100 of nitrogen to 2020 of carbon in hay, and 1919 in oats. These two aliments contain, therefore, in the same proportion, the principles which played the most important part in the food of animals.

Potatoes contain	21·80	of carbon	to 100	of nitrogen.
The beetroot of Silesia	20·12	,,	,,	,,
White carrots	19·90	,,	,,	,,
Jerusalem artichokes	21·75	,,	,,	,,

These aliments have often been given to farm horses, recommended by M. Boussingault, who has furnished these means of comparison, but to replace one kilogramme of hay it requires

	For the nitrogen.	For the carbon.
Potatoes	2·875 kil.	2·664 kil.
Beetroot, Silesia	4·600 ,,	4·618 ,,
White carrots	4·791 ,,	4·859 ,,
Jerusalem artichokes	3·484 ,,	3·262 ,,

They are, therefore, of considerable bulk in the rations, and inconveniently contain much water, either in its free state or combined with the saccharine matter, which forms nearly the totality of their solids. The horse receives in one kilogramme of hay 378 of water, would take in the equivalent of

Potatoes	2·518 kil.	Carrots	4·431 kil.
Beetroot	4·195 ,,	Jerusalem artichokes	3·084 ,,

Also these substances have never been considered proper to form the basis of the aliment for the horse, and they are

only mentioned here to make it comprehensible that it is not enough that a horse is well fed, but the food must also contain the necessary quantity of the elements of nutrition, and that those elements must be sufficiently concentrated as in the aliments taken for type, namely, meadow hay and oats. The author remarks further on, "It is a question whether these aliments are not indebted for some of their advantages to the superiority of their odours, owing to their aromatic principles, exciting the horse to eat them greedily, digest them well, and appropriate them thoroughly?"

Aliments insufficient in thermogen principles.—Instead of hay leguminous plants are given to horses, such as dried clover, sainfoin, lucerne, &c.; all these vary little in their chemical composition. Lucerne contains

Albuminoids	12·00	Phosphoric acid	0·25
Saccharoids	41·80	Mineral matter	5·45
Fatty matter	3·50	Water	15·00
Ligneous, &c.	22·00		

Clover hay contains

Albuminoids	10·60	Phosphoric acid	0·315
Saccharoids	39·20	Mineral matter	4·685
Fatty matter	3·20	Water	20·000
Ligneous, &c.	22·20		

If we reduce the albuminoids into nitrogen, and the respiratory principles into carbon, we find 1·70 of the former and 20·32 of the latter, or 1195 of carbon to 100 of nitrogen. The sainfoin is harder than the lucerne or clover, but is similar in its composition.

The second cut of meadow hay in composition resembles the legumini.

Albuminoids	12·40	Ligneous, &c.	21·50
Saccharoids	40·50	Mineral matter	8·00
Fatty matter	3·50	Water	14·10

The carbon being to the nitrogen as 176 to 100.

The second cut of meadow hay has always been considered as more fit for the feeding of milch cows.

It has been remarked that horses fed on it sweat, and renders them unfit for work; the composition explains this.

Like the hay, the grains of the legumini contain a large quantity of albuminoid matter.

Beans contain

Albuminoids	29·70	Phosphoric acid	1·02
Saccharoids	49·90	Mineral matter	1·98
Fatty matter	2·00	Water	12·50
Ligneous, &c.	2·90		

Reducing the albuminoids into nitrogen and the respiratory elements into carbon, we find nitrogen 4·75, carbon 23·37, being 492 of carbon to 100 of nitrogen, the fatty matter being as 42 is to 100.

The composition of vetches is

Albuminoids	27·30	Phosphoric acid	1·15
Saccharoids	18·90	Mineral matter	1·85
Fatty matter	2·70	Water	14·60
Ligneous, &c.	3·50		

In the reduction of these we have nitrogen 4·36, carbon 23·9, or as 62 of fatty matter is to 100 of nitrogen.

The composition of peas is

Albuminoids	22·15	Phosphoric acid	0·76
Saccharoids	61·00	Mineral matter	1·74
Fatty matter	2·00	Water	9·25
Ligneous, &c.	3·10		

In reducing the albuminoids into nitrogen and the respiratory elements into carbon, we have 3·54 of the former and 28·03 of the latter, or 791 of carbon to 100 of nitrogen, the fatty matter being to the nitrogen as 56 is to 100.

Amongst the authors who have written on the effects produced by feeding on the legumini, some say that they produce congestion of the organs of digestion, the others, that they cause anæmia.

The first of these affections has been observed in the south, the second in the north. The effects of these aliments vary accordingly in their nature and intensity, and are not always constant; they manifest themselves mostly when the plants have acquired their full maturity, but are cut before the grains are formed. It is not considered by the veterinary profession (the author remarks) that the legumini are noxious, but all agree that they cannot be exclusively used as aliment for working horses, and no one recommends the feeding of horses on beans and clover, or lucerne hay, to the same extent as on oats and meadow hay.

Buck-wheat has been strongly recommended by Thoër and Dombasles as a substitute for oats in the feeding of farm horses. Its cultivation being easy, and its composition the nearest to that of oats, it contains

Albuminoids	13·10	Phosphoric acid	0·38
Saccharoids	64·00	Mineral matter	2·12
Fatty matter	3·90	Water	13·00
Ligneous, &c.	3·50		

By reducing the albuminoid into nitrogen and the respiratory elements into carbon, we have 2·09 of the former, and

31·58 of the latter being fatty matter, as 191 to 100 of nitrogen. Barley has often been prescribed as a substitute for oats, and is, in fact, used instead in Asia and Africa, but in France all proprietors of public conveyances know that it can only be used in small quantities in the rations, and that it predisposes horses to sanguineous congestion and laminitis. Its composition is

Albuminoids	11·50	Phosphoric acid	0·85
Saccharoids	65·50	Mineral matter	1·65
Fatty matter	2·80	Water	14·50
Ligneous, &c.	3·20		

Giving 1·84 of nitrogen, 30·88 of carbon, being 1678 of carbon to 100 of nitrogen, the fatty matter being to the nitrogen as 152 is to 100.

Rye, which has also been often tried, contains

Albuminoids	11·80	Phosphoric acid	0·83
Saccharoids	66·70	Mineral matter	0·87
Fatty matter	1·80	Water	15·0
Ligneous, &c.	3·6		

Giving nitrogen 1·90, carbon 30·18, being 1588 of carbon to 100 of nitrogen, the former being to the latter as 90 is to 100. Wheat is composed of

Albuminoids	14·80	Phosphoric acid	0·91
Saccharoids	66·50	Mineral matter	0·99
Fatty matter	1·30	Water	13·50
Ligneous, &c.	2·0		

Being, when reduced, 2·37 of nitrogen, 29·46 of carbon, as 54 of fatty matter to 100 of nitrogen.

On account of the high price this grain is seldom given as food to horses; it might, however, be recommended for stallions in the season, and to brood mares when with foal, its beneficial effects being on account of its nitrogenous principles contributing to the production of milk, sperm, and fœtus.

Given to working horses instead of oats they become diseased, as was the case in the latter part of the last century with the horses of the French army.

Comparing the composition of the meadow hay with that of lucerne, and that of oats with beans and rye, we can easily account for the effects produced by aliments, which we call insufficient.

If a horse which consumes in five days 37·500 kilogrammes of hay, and 25 kilogrammes of oats, receives instead of it 37·500 kilogrammes of lucerne, and 25 kilogrammes of rye, there would be introduced in his system 1195 grammes of

nitrogen, and 15,708 grammes of carbon, instead of 856 grammes of nitrogen, and 16,860 grammes of carbon; that is 339 grammes of nitrogen more and 1160 grammes less carbon than he would receive if fed on meadow hay and oats. If beans were substituted for oats the horse would receive three times more plastic matter and one-third less of the thermogens.

If a horse requires, for the kind of work it has to perform, an aliment similar to meadow hay and oats, as has been demonstrated by observations, is it surprising that he is underfed when rye, barley, or beans are substituted, be it that these aliments are either deficient in the dynamogen principles, or that they contain an excess of the plastic elements?

The effects produced on the horse by insufficient aliments are of necessity variable, and vary according to the quantity of aliment forming the rations. Many of these aliments deviate from meadow hay more by the excess of nitrogen than by their deficiency of carbon. Thus if we substitute for the hay and oats equal weight of lucerne and rye, most probably the horse would suffer more from the excess of the nitrogenous principles than from the want of carbon. If, on the contrary, we reduce the quantity of grain and forage in proportion to the greater nutritious value in the rye and lucerne, to that of meadow hay and oats, horses will suffer so much more from the want of the respiratory principles as they have already been reduced by the substitution of one aliment for the other, than by the reduction of the rations. This leads us to believe that most frequently, in these substitutions, the evil effect is produced by an excess of nitrogen, it appears that these aliments, which have never been sufficient to keep the horse in good working condition, are distinguished principally by an excess of nitrogen, from those which have been considered as the type of aliments, as for instance, when lucerne is substituted for meadow hay, weight for weight. The convenience in the choice of these aliments must depend on the age of the animals, the work they have to perform. Aliments deficient in fatty matter and respiratory principles generally might be used in large proportions in the food of horses for slow work, and in many farms horses are exclusively fed on them, while in the feeding of horses for fast work they can only be used in very small quantities, and in conjunction with aliments rich in thermogen principles.

Aliments rich in thermogen principles.—All hippocratics have acknowledged the utility of straw as food for horses; the composition of this aliment is—

Albuminoids	3·10	Phosphoric acid	0·28
Saccharoids	39·90	Mineral matter	5·72
Fatty matter	2·40	Water	12·30
Ligneous, &c.	36·30		

Which, by reduction, gives 0·50 of nitrogen, 19·61 of carbon, being 3920 of fatty matter to 100 nitrogen, the former being to the latter as 480 is to 100.

It is often advantageous to combine the straw with the rations of the horse. Of all aliments it is the one that contains the greatest amount of carbon in proportion to the nitrogen. This composition renders it very convenient to equalize those aliments which have an excess of nitrogen, and enables us to make a more economical return, for which purpose it is necessary that it should be cut into chaff.

Of all aliments maize is the best adapted to replace oats. In America, Spain, Italy, and France it is given to horses and mules, and they do well on it. During the Mexican campaign it was of great service to the horses of the army. On a ration from 4 to 5 kilogrammes, according to the size of the horse, they performed the hardest work on the bad road between Vera Creuz and Puebla, and that in the inclement climate of America.

The composition of maize is

Albuminoids	12·30	Phosphoric acid	0·54
Saccharoids	70·40	Mineral matter	0·66
Fatty matter	9·90	Water	4·50
Ligneous, &c.	1·70		

Giving 1·97 of nitrogen, 41·50 of carbon, being 2106 carbon to 100 nitrogen. The fatty matter being to the nitrogen as 401 is to 100.

Up to the present oleaginous grains have not been used as food, except in special cases to restore horses exhausted by hard work and insufficient food.

Hemp seed is composed of

Albuminoids	16·30	Phosphoric acid	0·77
Saccharoids	23·60	Mineral matter	1·45
Fatty matter	33·60	Water	1·20
Ligneous, &c.	12·10		

Nitrogen 2·60, carbon 50·40, being 1938 of carbon to 100 of nitrogen, the fatty matter being to the nitrogen as 1292 is to 100.

Linseed contains

Albuminoids	20·50	Phosphoric acid	2·41
Saccharoids	19·00	Mineral matter	3·59
Fatty matter	39·00	Water	12·30
Ligneous, &c.	3·20		

Being nitrogen 3·28, carbon 54·98, the fatty matter being as 1189 is to 100.

We have not followed the author in the calculation of the quantity of the different elements in the different kind of forages to replace one kilogramme of hay, nor in the calculation of the plastic and respiratory principles in each of the kinds of grain and forage, compared with their market price. There is enough in these extracts to show that the good qualities of the alimentary substances does not so much depend on the amount of nitrogenous flesh-forming, or plastic principle, which, when in excess to the requirement of the organism, may tend to injuriously modify the blood, while on the contrary, an excess of the respiratory and thermogen principles is converted into fat, contained in proper cells. An exact knowledge of the analysis of the different alimentary substances is of great importance, not only to the proprietors of working horses, but also to the breeders and stock owners, as thereby much food might not only be economised by a judicious application in accordance with its composition. We need hardly repeat that the albuminoids are the flesh-forming elements, the saccharoids and fatty matter supply the respiration and caloric, the phosphoric acid and the other mineral salts are to supply the bones, the brain and nerves, while the ligneous and cellulary substances, with the water probably only act as what the French call (cest) "id est ballast," or better, as non-nutritive substance, but necessary to distend the organs of digestion.

With these remarks we reluctantly take leave of a most interesting and useful work, on which we cordially congratulate the learned author.

ROYAL COLLEGE OF VETERINARY SURGEONS.

REPORT OF THE PROCEEDINGS AT A SPECIAL MEETING OF THE COUNCIL, APRIL 25TH, 1870.

The President in the Chair.

MEMBERS PRESENT:—The President, Professor Spooner, Professor Gamgee, Assist.-Professor Pritchard, Mr. Fleming, Mr. Harpley, Mr. Moon, Mr. J. C. Broad, Mr. Wilkinson, Mr. Gowing, Mr. Hunt, Mr. Field, Mr. Pritchard, and the Secretary.

The minutes of the last meeting were read.

Mr. Wilkinson said the names of the late members of the profession included in the obituary notice read at the last Council meeting should have appeared on the minutes.

It being understood that this was to be done in future the minutes were adopted.

A letter from Dr. Dunsmure, dated 22nd of April, 1870, was read with reference to the recent examinations.

The President explained that there were neither specimens of healthy bones nor diseased bones, nor specimens of drugs on the table at the examinations referred to in the letter, and there was a delay of half an hour. It appeared that on former occasions Professor M'Call provided the specimens. On this occasion Professor Williams was to do so, but he had forgotten all about it. There was great delay, and the question was forced upon them whether it would not be better to be independent of the colleges, and to have specimens of their own. If the Council would provide a few drugs and bones the Secretary would take charge of them. He promised to name it to the Council. He thought they had provided drugs for the examinations in that room.

Professor Spooner: Is it so?

The Secretary: No, only part of them.

Professor Spooner: Professor Morton provided some of the specimens. I may say at every examination we have sent down from our college anatomical specimens.

The President: They would manage, I dare say, with the anatomical specimens; they wanted the drugs.

Professor Gamgee said, for several years he provided a great many specimens in Edinburgh and they had really a very fair collection, as a rule, on the table. It was a matter requiring careful consideration. It was very important that materials should be provided for examinations. They could not discuss the question at that meeting, and he proposed that they should reconsider the matter as early as possible after the annual general meeting. No doubt some of them might co-operate to get some specimens together.

Mr. Wilkinson did not see the least difficulty in the matter. If, as was suggested, the examinations were to be held alternately at Glasgow and at Edinburgh, Professor M'Call would furnish everything except drugs from his own museum, and Professor Williams could have done so this year. As to drugs, it would be very wise on the part of the College to procure such a selection as the Examiners on Chemistry, &c., at Edinburgh and Glasgow might require. But as to anatomical preparations, it would have to provide a whole museum if it were to meet every caprice of the Examiners. The Secretary might communicate with Dr. Dunsmure to know what drugs would be wanted.

The Annual Report.

The Secretary read the draft report.

Mr. Wilkinson thought that the proceedings at the last annual meeting should be included in the report.

Professor Gamgee said the report was only meant to be an abstract of the proceedings of the Council.

Mr. Fleming said the report was a very long one, and it was desirable to consider whether much of it might not be condensed with advantage.

Mr. Hunt said he had advocated thoroughly laying before the profession what they had done. The Council were, in point of fact, sitting in a closed chamber, and before the more voluminous reports which had recently appeared in the *Veterinarian*, little or nothing was known about the doings of the Council. Many country veterinary surgeons were hardly cognisant that there was such a thing as a Council; or if they knew of its existence, did not know who were members of it, or what those members did. Instead of abbreviating the report, they should place before the profession what had been done from beginning to end. They did not want any verbiage or embellishment, but simply a plain statement of facts; and from what he had gleaned of Mr. Coates' report on the whole, there was not much to find fault with.

Mr. Gowing said it had been remarked at the annual meetings that the reports of the Council were of too meagre a character.

Mr. Wilkinson, with reference to his suggestion that the proceedings at the annual meeting should appear in the report, said the meeting was the only one in the year at which gentlemen belonging to the profession, but not on the Council, had an opportunity of expressing their sentiments, and it would not be unacceptable to them if they were to see their names mentioned as advocating some very sound principles, which they did on that occasion. The report ignored that meeting altogether.

Mr. Hunt.—Simply because it is not a Council meeting.

Mr. Wilkinson said it was a much more important meeting than the Council meetings. It was a meeting of the body corporate, and superseded all other meetings. The Council had no power, except through the body corporate, to do what they did.

Mr. Hunt said the annual meeting was an open meeting, and one at which the body corporate were requested to attend. No one was present at the Council table but members of Council, and it was their proceedings that he wished to have explained to the public.

Mr. Fleming said no one was more desirous than himself of giving the profession every information with regard to what was done at that table. He referred to some of the reports, which were extremely lengthy, and which might be condensed with advantage. They might put, in fewer words, what had been said in those reports, and still give the profession the full advantage of knowing what had been done.

The report, after having been read through clause by clause, and some verbal alterations made in it, was adopted.

The Auditors' report was read.

Mr. Wilkinson proposed that the report be received. *Mr. Hunt* seconded. Agreed to.

Mr. Broad proposed that the report be adopted. *Professor Pritchard* seconded. Agreed to.

The report of the deputation who had been appointed to attend the Governors of the Royal Veterinary College was read.

The President said he was informed that the Edinburgh and Glasgow authorities were very anxious in reference to this preliminary examination, and the Governors at the Royal Veterinary College were equally determined to have it put into operation at the beginning of the next session. He suggested that a meeting of the professors should be held the day after the annual meeting. The professors from Glasgow and Edinburgh would then be here.

The suggestion met with Professor Spooner's approbation, and if the Council agreed to it the Education Inquiry Committee would meet the professors on the Tuesday after the annual meeting. He might inform the Council that the high schools of Edinburgh and Glasgow had been communicated with, and they were both agreeable to undertake the duties in accordance with the plan he had sketched out. The professors of the Edinburgh school had been requested to draw out a form, and had done so. The nature of it was that the Board should undertake the duty of preliminary examination and should be composed of three gentlemen, one to be chosen from the College of Preceptors in London, to examine the London students; one from the High School in Edinburgh, to examine the Edinburgh students; and one from the High School in Glasgow, for their Glasgow students: that all examinations should be written, and that the written examination of the London students should be sent from the London examiners to the Edinburgh examiner for his approval or disapproval; then he was to send it to Glasgow, and it would then go back to

London. That was a very tortuous course. Professor Spooner objected to it, on the grounds that there would be two Scotch examiners to one English examiner. He (the President) was glad to say the professors of the Edinburgh College had withdrawn their plan, and adopted his own, which was, as far as he could glean, in accordance with the views of the Council and Royal Veterinary College.

Was it agreeable to the Council to have a meeting of the Examination Inquiry Committee on Tuesday next?

Professor Gamgee said it was not necessary to make a formal motion on that subject. The Council signified its consent. He moved that the report be received and adopted, and entered on the minutes.

Mr. Moon seconded the resolution, which was agreed to.

Mr. Wilkinson inquired whether any one had been instructed to prepare a scheme for being submitted to the meeting on Tuesday.

The President said the scheme he drew up had been before the Education Inquiry Committee, and it had also been received by the Council.

Professor Gamgee.—And practically adopted by the schools.

The President said the Edinburgh Professors and Trustees, and also the Glasgow School had adopted it. It had been before the Governors of the Royal College, but Professor Spooner objected to the proposed covenanting with any individual, and also thought that the Glasgow College ought to be placed on the same basis as the Colleges of Edinburgh and London. The existence of the Glasgow College depended upon one man, and that the professor objected to.

Mr. Fleming wished to know what steps had been taken, if any, with reference to examinations on the living subject?

The President said that the Edinburgh and Glasgow Colleges fully expected that the practical examination would take place at the present examinations, and their pupils were prepared to undergo the same. Professor Spooner raised an objection to the effect that it was not giving the students a fair chance, for they had not had sufficiently long notice that such an examination would take place, although it had been adopted by the Council. It was, however, the determination of the Council that next year the practical examination should take place in addition to the usual oral examination.

Mr. Fleming moved "That notice be given, by the President, to the heads of the Colleges, at an early period, that the practical examination would take place next year, and in every succeeding year." He was rather afraid that if they did

not push the matter on, it would be missed again another year.

Mr. Broad seconded the motion, which was agreed to.

Assistant-Professor Pritchard called attention to a resolution which had been passed by the Council, to the effect that a pupil, having been rejected, should not come up again the same evening. This, he said, was in opposition to the 32nd bye-law:—"Should the result of the examination of any candidate appear doubtful, such candidate should be recalled and examined before the whole Court.

Mr. Wilkinson said if one of the examiners expressed a doubt about a man it would be for the Chairman of the Board of Examiners to determine whether he should be called up again. The 32nd by-law was intended to meet such a case, where there was a doubt; but when the vote was absolutely against a man, he was not eligible to come up again. The resolution referred to by Mr. Pritchard applied to the latter case.

The Council then adjourned.

ANNUAL MEETING, HELD MAY 2ND, 1870.

THOMAS GREAVES, Esq., President, in the Chair.

THE twenty-seventh annual meeting of the members, politic and corporate, of the Royal College of Veterinary Surgeons was held by advertisement, and in accordance with the provisions of the Charter, on the first Monday in the month of May, being the second day thereof, 1870, at the College, No. 10, Red Lion Square, Holborn, London.

Present—The President, Thomas Greaves, Esq.; Professors Spooner, Simonds, Williams, Gamgee, Wilson, and Assistant-Professor Pritchard; John Wilkinson, Esq., Principal V.S. to the Army; Messrs. T. Aubrey, J. W. Axe, C. Barrow, J. D. Barford, G. Balls, H. T. Batt, T. P. Boughton, W. Bentley, W. Broughton, T. D. Broad, J. C. Broad, Alfred Broad, T. Burrell, jun., H. W. Caton, H. J. Cartwright, Alfred Challinor, W. J. Challinor, M. Clarke, T. Corby, James Cowie, J. R. Cox, John Cuthbert, C. Dayus, E. C. Dray, G. A. Drewe, W. Ernes, J. W. Evans, William Field, jun., G. Fleming, R. F. Frost, J. Gerrard, Jos. Gibbs, B. S. Glover, T. W. Gowing, T. W. Gowing, jun., C. J. Grey, M. Hack, E. O. Harrison, W. Helmore, R. L. Hunt, W. Hunting, Frederick Jarvis, W. H. Kemp, J. Kenny, C. Lawrence, H. Lawrence, G. A. Lepper, H. G. Lepper, C. Lowe, C. Lovegrove, W. J. Masters, James Moon, James

Moore, G. Morgan, M. E. Naylor, G. A. Oliphant, H. Olver, W. Partridge, C. Phillips, Rd. Pritchard, A. E. Queripel, W. Robinson, James Rose, T. Sangster, F. R. Silvester, W. Smith, Ed. Stanley, F. T. Stanley, P. Taylor, W. A. Taylor, R. C. Trigger, W. Wilson, S. H. Withers, H. Withers, Jos. Woodger, Jos. Woodger, jun., Ed. Woodger, and the Secretary.

The Secretary read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

The Secretary then read the twenty-seventh annual report, including the Treasurer's annual balance-sheet.

REPORT.

The Council of the Royal College of Veterinary Surgeons have to report to the body corporate that at their first meeting, held in May, and in accordance with the provisions of the charter, Thomas Greaves, Esq., was elected President. The following gentlemen were also elected to fill the office of Vice-Presidents: Principals Williams and McCall, Professor Brown, Messrs. Harrison, Thacker, and Morgan; Treasurer, Mr. S. H. Withers; and Secretary, Mr. W. H. Coates.

The only political question which occupied the attention of the Council during the past year was the Pharmacy Act Amendment Bill; and an application was successfully made, through the Parliamentary agents, for extending the provisions of the Act to the members of the Royal College of Veterinary Surgeons. The following is an extract from the Act, dated August 11th, 1869:

"Whereas it is expedient to amend the provisions of the Pharmacy Act of 1868 in regard to duly qualified Medical practitioners and Veterinary Surgeons, and in other respects, as follows:

"Nothing contained in the first fifteen sections of the Vested Act shall affect any person who has been registered as a legally qualified medical practitioner before the passing of this Act, and the said clauses shall not apply to any person who may hereafter be registered as a legally qualified practitioner, and who, in order to obtain his diploma for such registration, shall have passed an examination in Pharmacy, nor shall the said clauses prevent any person who is a member of the Royal College of Veterinary Surgeons of Great Britain, or holds a certificate in Veterinary Surgery from the Highland and Agricultural Society of Scotland, from dispensing medicines for animals under his care."

The attention of the Council has also recently been directed to the Juries Bill, brought in by Lord Enfield, to which reference was made in October, 1869.

The Parliamentary agents have been instructed that steps be taken with a view to members of the Royal College of Veterinary Surgeons obtaining an exemption from serving on Juries, and it is hoped that this reasonable demand may be favorably received.

Two of the most important questions of the day in reference to the Veterinary profession, which have had the unceasing attention of the Council, have been, 1st, the introduction of a uniform preliminary examination of the student, previously to his entrance at either of the established schools; and 2ndly, that of a practical examination in addition to the oral one, when the student offers himself as a candidate for the diploma of the Royal College of Surgeons.

A deputation from the Council of the Royal College of Veterinary Surgeons, consisting of the following gentlemen, viz.: The President, Professor Brown; Messrs. Broad, Harrison, Thacker, and the Secretary, had the honour of an interview with the Governors of the Royal Veterinary College on July 13th, 1869, on the subject of the preliminary examination.

The deputation, having been introduced by Professor Spooner, explained the object they had in view in waiting upon the Governors, viz., the advisability of more stringent measures being adopted in the matriculation examination of students, previously to their entrance to the school, and that an independent preliminary examination should be instituted by an educational body, such as the College of Preceptors, together with the adoption of a system which could be extended to the Edinburgh and Glasgow Colleges; and that the authorities of those institutions should be asked to institute similar examinations.

Their aim was the introduction of a better class of educated men into the profession.

The Chairman, J. W. Bozanquet, Esq., replied, that the Governors concurred in the views taken by the deputation for a better class of men being introduced into the profession. He would suggest that a proper representation should be sent to the other schools, soliciting them to take the same course, when the Governors would do all in their power to aid the progress of education.

The deputation were also informed that the College of Preceptors had been asked and were fully prepared to entertain the subject of the preliminary examination, and were further

informed that the Royal Veterinary College had already instituted such an examination.

Acting upon the suggestions submitted by the Chairman, a communication was forwarded to the authorities of the Edinburgh and Glasgow Colleges, soliciting them to take the necessary steps for the introduction of an educational test of the student, previously to his admission into either of the respective schools; and requesting to know when a deputation from the Royal College of Veterinary Surgeons could be received in Scotland.

Meanwhile a copy of the following report was received from the Professors of the Royal Veterinary College on the subject of the matriculation examination which had been sent by them to the Governors of that institution, and also a copy of the resolution passed by the Governors, requesting that both might be laid before the Council of the Royal College of Veterinary Surgeons.

ROYAL VETERINARY COLLEGE,
August 23*rd*, 1869.

To the Governors of the Royal Veterinary College.

MY LORDS AND GENTLEMEN,

We, the undersigned Professors of the Royal Veterinary College, beg to report that after having consulted together on the nature and extent of the matriculation examination, are of opinion,

Firstly. That the examination hitherto conducted by us has been of considerable benefit, both to this institution and to the profession.

Secondly. That it would be more satisfactory to the profession and to ourselves, if the matriculation examination, without at present increasing its stringency, were to be conducted by the College of Preceptors.

Thirdly. That it should be at once announced by advertisement, and in the prospectus of the College, that persons presenting themselves for the matriculation examination in September, 1870, will have to pass in—

1. Writing from dictation.
2. Parsing a simple sentence.
3. Reading aloud.
4. The first four rules of arithmetic, and simple rule of three.

(Signed) CHAS. SPOONER,
JAS. B. SIMONDS,
RICHARD V. TUSON,
WILLIAM PRITCHARD.

At a Meeting of the Governors of the Royal Veterinary College, held on Tuesday, the 24th of August, 1869, it was resolved—

First. That the Report of the Professors be entered on the Minutes.

Secondly. That the Committee approve of the suggestions that the examination of candidates should hereafter be conducted by the College of Preceptors.

Thirdly. That it is not expedient at present to determine upon, or advertise the course which may be adopted by the Governors in the year 1870.

Fourthly. That a copy of the Report of the Professors, together with the foregoing resolutions, be communicated to the Council of the Royal College of Veterinary Surgeons, with a view to bring about a simultaneous and harmonious movement between the several schools for Veterinary instruction with regard to the matriculation examination.

(Copy of Letter.)

ROYAL VETERINARY COLLEGE,
COLLEGE STREET, CAMDEN TOWN;
August 30th, 1869.

SIR,

At the request of the Governors of this College, I beg to forward you a copy of the Report of the Professors on the matriculation examination, together with a copy of the Resolutions passed thereon at a Meeting of Governors, held on Tuesday, the 24th of August last.

(Signed) CHAS. SPOONER,
Principal, and Senior Professor.

W. H. COATES,
Secretary.

A deputation appointed by the Council of the Royal College of Veterinary Surgeons, consisting of the President, Messrs. Broad, Field, Fleming, Lawson, Morgan, Robertson, and Wilkinson, afterwards waited upon the authorities of the Scotch Schools on November 1st, 1869.

The deputation having been introduced by Professor Williams, the Trustees of the Edinburgh Veterinary College were informed that the greater part of the deputation who had the honour of waiting upon them were Scotchmen who had graduated at the Edinburgh Veterinary College, and who were animated with the best feelings towards that institution. The object of the deputation was to advocate the adoption of a preliminary examination of all candidates previously to their entrance into the schools. That the indis-

criminate admission of students materially retarded the progress of the profession. It was mentioned that the London Veterinary College for the last five years, and the Glasgow Veterinary College for the last two years, had instituted a preliminary examination with the best results, and that the students were found to be better qualified to present themselves before the Examining Boards.

It has been considered that these preliminary examinations should be conducted by an independent body, such as the College of Preceptors, with whom the Governors of the Royal Veterinary College are now in communication, the same body being appointed to test the educational qualifications of students entering the College of Surgeons in London. It has been thought that the High School of Edinburgh or the Society of Arts might undertake a similar duty in behalf of the Edinburgh and Glasgow Veterinary Colleges, provided that an arrangement identical in principle be made with the Principals of each College.

The cause was ably advocated by Mr. Wilkinson, principal V.S. to the Army, as one of the Governors of the London Veterinary College. Mr. Wilkinson concluded by expressing a hope that the Trustees would take the widest view of the subject, and give their powerful support to the movement.

Bailie Fife, in regretting the absence of the Lord Provost, said the Town Council felt much gratification in meeting a deputation composed of eminent members of the Veterinary profession from various parts of the United Kingdom, and amongst them those who had graduated at their own College, showing how deep and united was the feeling of the profession on the subject. He was sure the principle upon which the Council of the Royal College of Veterinary Surgeons had based its present action was a true one. He, therefore, proposed that the subject should be put into such form as would enable him to bring it officially before the Town Council.

Statement left with Trustees.

Mr. Chairman and Gentlemen,

As already stated by Principal Williams, we are a deputation from the Council of the Royal College of Veterinary Surgeons to confer with you on the subject of the general education of the Veterinary Student.

We present ourselves under the very exceptional circumstance of a body of men who ask leave to be allowed to improve their professional and social position.

The Council of the Royal College of Veterinary Surgeons

has long been painfully sensible of the fact that neither the one nor the other is either what it should or might be; and it considers that now, as narrow views are giving place to more enlightened ones, a favorable opportunity is offered for enabling it to acquit itself of its very highest duty, by seeking to make some important advances.

The Council has, from time to time, been made conscious of the very little progress which has followed the existing system of entering the schools; and is fully persuaded that at least one of the causes of the almost moribund condition of the body corporate is traceable to the pupil's being admitted to a participation in the professional teaching, without having been subjected to a test as to his general scholastic abilities. And the Council feels it to be a reproach that the mode of testing which is now so extensively resorted to in all situations of life, where learning is necessary, has not yet been fully applied in the case of those whose ultimate object is that of becoming members of the Royal College of Veterinary Surgeons.

There are alleged difficulties in the way of amendment in connection with this system, but we feel sure that they are more imaginary than real, and are capable of easy adjustment.

One of these difficulties relates to the professor's interest in the admission fees; but we think that we are justified in concluding that any apprehension on this head must be unreal, for, in the instances in which the educational test has been introduced, the number of students has increased, and it has been said that there has been an appreciable advance in their general intelligence. In this circumstance we have a full assurance that the interests of the professors will proceed *pari passu* with those of the Royal College and also of the public, which are so closely and inseparably connected.

Another apparent difficulty is shadowed forth in that phase of the subject which bears upon the obligations which the Royal College may be said to be under to those youths who have commenced the study of veterinary medicine, with the prospective intention of completing their professional education at one of the schools in the United Kingdom. Upon this point we may venture to express an opinion that the proposed examination should be subject to such modifications as the interest of those students, and the obligations which the Royal College is presumably under, may demand.

The necessity for a much higher standard of education cannot be exaggerated, nevertheless the proposed system of

examination, although it will be gradually increased, cannot be carried into full effect for some time.

We have reason to believe that the other schools are prepared to give their adhesion to the scheme which we are advocating, provided the Edinburgh authorities adopt it. It is, therefore, self-evident that the result of this meeting will, for weal or for woe, mark a most important epoch in the history of our profession.

In conclusion we wish to say that, being fully alive to the necessity of effecting great ameliorations in the status of the veterinary profession, while keenly appreciating the just demands which are made in the interests of the public, and having due regard to the welfare of the several schools and their respective professors, and also having given very careful consideration to the various divisions of the subject, the Council has come to the conclusion that a matriculating examination is an absolute necessity, and this deputation, acting under the authority of the whole profession, as represented by the Council of the Royal College of Veterinary Surgeons, respectfully solicit the co-operation of your lordship and your brother trustees in support and furtherance of this laudable object.

We propose the examination shall be on the following subjects, namely:

Writing from dictation.
Parsing a simple sentence.
Reading aloud.
The first four rules of arithmetic and simple rule of three.

Signed by the President and each Member of the Deputation.

1*st November*, 1869.

In the early part of this year the Town Council of Edinburgh, through their agent, forwarded a communication to the following effect: "That the trustees had approved generally of the representations made by the deputation, and that when the heads of the various Colleges had decided as to the precise mode in which the examinations are to be carried out, the trustees would be glad to be afforded an opportunity of finally adjusting the scheme." A further communication was afterwards received from the Edinburgh Veterinary College, recommending the appointment of a General Examining Board, and expressing their willingness to receive any suggestions relating to the details which the Royal College of Veterinary Surgeons might have to propose.

Another subject which has equally occupied the attention of the Council has been the Examination Inquiry Committees' Report. Acting upon the suggestions made by Mr. Ernes, the Committee, in bringing up their Report, expressed an opinion that it would not be to the interest of the profession for the solution of this question to be indefinitely postponed.

Indeed it is universally acknowledged that reforms in the system of testing the capabilities of young men for the practice of the veterinary art are urgent. Nevertheless your committee consider it impossible to give effect, at once, to all the propositions made by Mr. Ernes, without meeting with obstacles which might endanger the early adoption of the most pressing modifications in the examinations for the College diploma.

Under existing circumstances it might be absolutely prejudicial to the best interests of the student, if compelled to resort to a greater extent than at present to that system of *cramming*, whereby even the most intelligent acquire a knowledge of the subjects taught them in the Veterinary Colleges during the two winter sessions of their attendance.

Your committee hope that the Colleges may soon take the initiative in an extended curriculum of study, which will not only justify but demand additions to the list of subjects on which future practitioners of the veterinary art have to be examined by this College.

Two of Mr. Ernes' propositions are not open to the objection of even apparently precipitating reforms. The one is the written examination as adopted by the Royal College of Surgeons and other institutions, which should be provided for at no very distant date. Students to be examined at the close of the present session might fairly urge that they had been taken by surprise if they were required to undergo a written as well as an oral examination, but this would not hold good for another year.

No such objection can be offered with reference to the examination of students by the side of living subjects on which they will have hereafter to practise the healing art.

Your committee are painfully aware of the fact that the Colleges and their students suffer in the eyes of the world from the complete lack of practical tact, manipulative dexterity, or quick-sightedness of many who seek to enter on their duties as veterinary surgeons as soon as they have received a diploma.

It is, therefore, of vital importance that, with the co-operation of the teaching Colleges, the Royal College of Veterinary Surgeons should at once institute a practical examination of candidates for its diploma. The veterinary section of the

Board of Examiners should be directed to test the skill of each student in the handling and examination of sick or healthy animals that can be provided for this purpose, as opportunities will thus be afforded to ascertain, with greater precision than otherwise, the student's knowledge of superficial anatomy and surgery. The means of securing animals; the methods of applying bandages, poultices, and fomentations; the situation of structures involved in most of the common operations, can, with other points, be made the subjects of adequate inquiry by the side of a patient in a manner at once satisfactory to both the examiner and the examined.

Your committee has, therefore, unanimously adopted the following resolution :—

"That after mature deliberation the committee report to the Council that it is considered absolutely necessary that a practical examination be instituted forthwith."

The Council had now to consider the mode in which the practical examination was to be carried out. It was decided that the committee should frame the regulations in detail for their guidance.

A special meeting was then convened for that purpose. The Examination Inquiry Committee, in accordance with the wishes of the Council, carefully considered the best means to be adopted to give effect to the proposal "that candidates for the diploma be tested as to their practical qualifications upon the living subjects."

The programme drawn up may be said to include :

1st.—Examiners.

This part may at once be disposed of, inasmuch as there are six members of the Board of Examiners for each section who will be able to perform this duty.

2nd.—Time of Examination.

This should be fixed on, so as to be followed by the oral examination; that is, the first twelve should undergo the practical examination either the previous day or during the early part of that on which the oral one takes place.

3rd.—The Nature of the Examination.

It must of necessity be left to the discretion of the examiners as to the various tests which they will resort to. The examination will be in a great measure clinical, technical, and manipulative, and should especially include the "age and soundness" of the horse, ox, sheep, and other domesticated animals.

4th.—Place of Examination.

It is hoped that the authorities of the Schools will kindly afford the examiners an opportunity of carrying out this duty within the precincts of the respective establishments, or at some other suitable place.

5th.—Providing Subjects.

This the Council, with the co-operation of the Professors, will be able to accomplish through the Secretaries.

6th.—Number of Examiners.

It is considered that two examiners for horses and two for cattle and other domesticated animals will be sufficient.

7th.—Results of Examinations.

Should a pupil fail at this examination, it will be for the Council to determine whether he shall be entitled to present himself for an oral examination before the whole Court. In any event, the examiners must state to the Chairman of the Board of Examiners the degree of excellence which the pupil has displayed.

8th.—Expenses.

The expenses incurred in procuring animals, payment of assistants, examiners, and place of examination, to be borne by the Royal College of Veterinary Surgeons.

9th.—Fees.

For the first year no increase to the examination fee shall be made; but after the first year the examination fee shall be raised to ten guineas."

The several clauses having been discussed by the Council, the report was adopted, and afterwards submitted to the authorities of the various schools for their consideration.

Both these subjects, viz., the preliminary and the practical examination, are in abeyance, and awaiting further deliberations from the heads of the departments to whom the communications were addressed. When carried out, it is hoped that the best results will accrue to the students as well as to the profession at large.

The Council regret having to announce that Mr. Wm. Cockburn, of Glasgow, one of the members of the Scotch Section of the Court of Examiners, has been compelled to tender his resignation in consequence of failing health. The loss of another member of the Court of Examiners in the death of Mr. John Lawson, of Manchester, is also much to be regretted.

The Council have the satisfaction of announcing that these vacancies have been filled up by the election of Mr. Alexander

Robinson, of Greenock, and Mr. Robt. Bell Paterson, of Dumfries, both of whom are believed to be eminently qualified to fulfil the duties pertaining to this office.

Eighty-nine pupils from the different schools have received the diploma of the Royal College of Veterinary Surgeons during the past year.

Presentations have been made to the Library and Museum of the College by the Surgeon-General of the U.S. Army, by Professors Gamgee, Tuson, and Armatage, and G. Fleming, Esq., F.R.G.S., Royal Engineers.

The Annual Register of the Members of the Royal College of Veterinary Surgeons has again been issued gratuitously to the profession. It is hoped that information recording the death or change of residence of any member which may occur will be at once communicated to the Registrar.

The Council have to record the death of thirty-eight members of the profession since the last Annual Meeting. Among these they may mention W. J. Goodwin, Esq., M.R.C.S., of Hampton Court, late V.S. to the Queen. To him the profession was much indebted for the prominent part he took in obtaining the Royal Charter of Incorporation. He was elected one of the first Members of the Council, which office he held during a period of seventeen years. He was also President of the College in 1853, and a Member of the Court of Examiners for six years, when he tendered his resignation. For eight years he held the office of Vice-President, until failing health prevented his attendance at the Council Board. His numerous contributions to the Library and Museum of the College bear testimony to his uniform liberality and to the great interest he took in the welfare of the Royal College of Veterinary Surgeons.

Another member of the profession, deeply regretted, is the late Mr. John Lawson, of Manchester. He was for many years a much esteemed Member of the Council. He also zealously officiated as one of the members of the Scotch Section of the Court of Examiners, and was elected President of the College in 1866.

The Council have likewise to record the death of Dr. Dalzell, Professor of Chemistry at the Edinburgh Veterinary College. Though a young member of the profession, he was esteemed by the students as an efficient teacher.

In the Financial Report it is stated that it has been deemed advisable to invest the sum of £500 in the Three per Cent. Consols, in the names of three Trustees who were appointed in accordance with the Bye-laws of the College. This report is annexed.

S. H. WITHERS, *Treasurer, in Account with the Council of the Royal College of Veterinary Surgeons*, from APRIL 1st, 1869, to MARCH 31st, 1870.

Dr.	£	s.	d.	Cr.	£	s.	d.
Balance at Bankers', April, 1869	538	6	5	Examiners' Fees and Expenses	345	17	0
Examination Fees	762	6	0	Rent	60	0	0
Registers	0	10	0	Rates and Taxes	29	10	8
Interest	11	4	11	Salary to Secretary	100	0	0
Property Tax	1	5	0	Insurances	1	18	9
				Advertisements	8	9	11
				Printing and Bookbinding	25	3	6
				Stationery and Postage Stamps	10	19	11
				Reporters	11	11	0
				Parliamentary Agents	5	4	2
				Coals, Gas, and Wood	12	10	0
				Drugs for Examiner's Table	0	4	10
				Museum Cases and Shades	3	3	0
				House Repairs and Furniture	13	15	3
				Wages	20	0	0
				Petty House Expenses	19	4	2
				Deputation expenses to Scotland	50	0	0
				Purchase of Stock in 3 per cent. Consols	500	0	0
				Brokerage for transfer of Stock	0	6	8
				Balance at Bankers'	95	13	6
	£1,313	12	4		£1,313	12	4

Amount of Stock standing in the names of the Trustees £534 0 11, Three per cent. Consols.

We, the undersigned, have examined the above accounts, and have found them correct,

April 14th, 1870.

RICHARD SKELTON, J. ROALFE COX, } *Auditors.*

Mr. Dray moved that the report be received.

Mr. Helmore seconded the motion, which was agreed to.

Mr. Morgan moved the adoption of the report.

Mr. Gowing seconded the motion.

Professor Simonds suggested that voting papers might at once be distributed, so that they might be filled up and handed to the scrutineers, who might make up their report while the discussion on the report of the Council was taking place.

Mr. Ernes objected to such a course being taken, as during the discussion certain things might be elicited which would alter the estimation in which particular members of the Council were held. It would not be fair either to exclude

two members of the profession, scrutineers, from the meeting during the discussion.

Mr. Stanley supported Professor Simonds' suggestion, but it was opposed by Mr. Gowing, Mr. Boughton, and Professor Spooner, and was ultimately withdrawn.

Assistant-Professor Pritchard moved the appointment of Messrs. Clark and Lawrence as scrutineers.

This was seconded by *Mr. Boughton*, and agreed to.

Mr. Dray said he was disappointed in not seeing the report of the deputation to the Glasgow School in the Annual Report. He wished to ask if anything had been done with regard to the preliminary and practical examinations beyond what was stated in the report.

The President expressed his regret that the report did not contain a full account of the interview between the deputation and the Principal of Glasgow College. Professor McCall met the deputation in Edinburgh, and expressed his approval of the scheme for a preliminary examination. In reply to the question alluding to the further steps that had been taken on this matter, he (the President) said the deputation had waited upon the Governors of the Royal Veterinary College since the report was drawn out; they were warmly in favour of its adoption, and agreed that the subject would be further discussed at a meeting of the professors with the members of the deputation committee to-morrow. Notice had been given to the various colleges that, in 1871 and subsequently, there would be a practical examination of the candidates.

Professor Williams approved of the report generally, but he trusted the College, though it undoubtedly had the right to impose whatever it thought fit, would take into consideration the feeling of the profession in Scotland, and not raise the fee to ten guineas.

Mr. Fleming said the increase would not take place for two years.

Mr. Helmore thought it was injudicious to thrust too many reforms upon the candidates all at once. If the regulations were made too stringent and too numerous, a great many men would be prevented from coming to the College, and would practise in the country without any diploma at all. It was a matter for regret that so many powerful men should at present be practising without diplomas, and it was desirable that, if possible, they should have facilities for obtaining those diplomas offered them. The adoption of the apprenticeship clause would provide for the wants of the profession, and enable students to acquire the necessary practical dexterity.

It would also do away with the necessity for instituting a practical examination. He would recommend that more publicity should be given to the proceedings connected with the College. Such a course would tend to popularise the profession.

In reply to a question by Mr. Cowie,

Professor Gamgee said he thought the best way to carry out the practical examination would be to let the pupils pass from it to the oral examination, when the two examinations might be weighed together. This point, however, could be settled afterwards, as a matter of detail. The report was merely the proposal of the Committee to the Council, and they were waiting for more information before settling the method of carrying out the examination.

Mr. Ernes characterised the report as a very able one, perhaps more so than any that had been previously presented to the Council. He was sorry nothing had really been accomplished, as the practical examination was not yet carried out. It was more than a quarter of a century ago that the charter was obtained; a generation of veterinary surgeons had almost passed away; but so far as the benefit it had conferred on the profession was concerned it had not been, up to the present time, worth the parchment on which it was written. It was originally intended that the charter should be supplemented by an Act of Parliament; but twenty years elapsed before any steps were taken in that direction, and then the attempt was a futile one. Last year, at the annual meeting, the necessity for instituting a practical examination was strongly alluded to; but it was said, if the matter were left in the hands of the Council, no doubt justice would be done. What, however, had the Council really done? It was January before they adopted the resolution with regard to the practical examination, when it was too late to carry it into effect. Why were not more of the suggestions thrown out at the last annual meeting attended to? Why was not the examination limited to once a year, so as to avoid such an expense as that at the examination before the last, when it cost something like £30 to examine one candidate? Another objectionable proceeding was the examination of a candidate twice, because it was thought he was nervous at the first. The adoption of written examinations would put an end to such things. Then, again, nothing had been done with regard to botany and microscopics, a knowledge of both of which was necessary for the proper performance of the duties of a veterinary surgeon. One step in the right direction had been taken, but no credit was due to the Council in respect to it. He alluded to the prelimi-

nary examination, which the Governors of the Camden Town College had decided on. There was one other reform, which it was desirable the Governors should carry out; they should make the medicine to subscribers dearer. The cheapness with which it was at present supplied was a disgrace to the profession, and injuriously affected general practitioners.

Professor Spooner protested against such a subject being introduced into the discussion. It had nothing whatever to do with the report which they had to consider.

Mr. Ernes said he was in order; the Governors were mentioned in the report.

Mr. Ernes said if patients were required at the College animals belonging to poor people might be received. With regard to the £50 expended by the deputation to Edinburgh, he thought, notwithstanding what they had said in self-laudation, that half a dozen postage stamps and a memorial would have done as much good as the visit to Scotland, and it would have saved the £50, which would have gone far to defraying the expense of the practical examination, for which it was stated no funds could be provided this year.

Professor Williams said the £50 were not wasted, for the deputation made an ineffaceable impression upon the trustees in Edinburgh.

Mr. Ernes.—That only shows that you are very impressible.

Mr. Boughton said, for the past five years the question of practical examinations had been agitated, and yet up to the present time really and truly nothing had been done in the matter; he therefore thought no more time should be lost, but that such examinations should be at once instituted. Great pressure was brought to bear upon the Council at the last meeting, and they had consequently moved on a little; but the younger portion of the profession felt that the practical examination was thoroughly needed, so that no more "muffs" should obtain the diploma of the College.

The President said he was of opinion that the Council had gone quite as far in the matter as it was possible for them to go. They had decided that the practical examination should take place, and had given notice to the effect that at the next examinations it would be carried out. He thought the £50 for the deputation to Scotland had been well spent. They met with every encouragement from the authorities, who warmly espoused the views presented to their notice. It had greatly increased and cemented that kindly and united feeling which the whole profession so much desired. Communications had been received from the High School of Edinburgh and the High School of Glasgow, both of which

were willing to examine the students this year. He had no doubt that the professors of those colleges would do all in their power to carry out the preliminary examination next October.

Mr. Helmore asked if it was considered advisable to avail themselves of the apprenticeship clause.

Mr. Wilkinson said the want of the profession would be met by the institution of practical examinations. A student might acquire the necessary skill wherever he chose, but he would have to acquire it somewhere.

Professor Spooner said the question of the propriety of introducing an apprenticeship clause was brought before the Council shortly after the charter was obtained, but the corporate body had no authority whatever with reference to the education of the pupil prior to his entering either of the colleges, and there was great opposition offered to the insertion of such a clause in the by-laws, and the proposal fell to the ground. At that time he was opposed to the introduction of the clause; not only did he think it was not expedient, but he also felt that the Council had no such authority; but subsequent reflection and experience had induced him to alter his views as regards the advisability of a youth being placed under the tuition of a practising veterinary surgeon prior to his presenting himself for his final examination for the diploma of the College, and he was the more convinced of the correctness of his present view from what had recently occurred in the Council, viz. the resolution to establish practical examinations. He had advocated such examinations for more than a quarter of a century; but he had seen so many difficulties in the way of carrying them out, not only with reference to pathology, but also with reference to anatomy, that he had hesitated to make any stir in the matter. The council had, however, now decided that a practical examination should take place, and the pupil, therefore, must necessarily in future be practically educated. The question then arose, how was he to obtain that education? It could not be imparted efficiently in a collegiate institution. No doubt some who entered the schools without any previous instruction would, by diligently applying their minds to the study, become ornaments to the profession. He could relate several such instances, but still it was unquestionably better that a pupil should be competent to undergo a practical examination. At the Royal Veterinary College there were rarely less than seventy patients, and operations were being constantly performed: but how could manipulative instruction be given to 100 or 150 young men at once? He therefore looked to the profession at large to

assist the young men, and not to shirk the responsibility of taking them as pupils before they came to College. It was the duty of the profession to afford every facility to those who wished to acquire a practical knowledge of the veterinary art, and to render the expense attending its acquisition as little as possible. The College authorities were prepared to exert themselves in every way for the benefit of the students. It was a great matter that the Council had resolved to have practical examinations; still he was sorry to say that he saw a number of difficulties in the way of its being carried out in the effective manner in which it ought to be. He trusted, however, that the Council would have wisdom sufficient to overcome every obstacle.

Mr. Hunting thought the Council had performed an almost Herculean task in bringing about a unanimity between the three schools. He thought it desirable that some opportunity should be given to members to discuss other matters besides those alluded to in the report, such as the expiration of the lease of the buildings. He could not regard the practical examination as a substitute for an apprenticeship clause. In some cases a candidate's answers were considered wrong, because they did not coincide with some peculiar theories held by the examiner. For three years this question had been asked at the examining board:—"Give the changes in the lungs during respiration?" and to his knowledge three men had answered it in this way:—"The blood in passing through the lungs gives up carbonic acid and takes in oxygen." The question next put was, "Where does this oxygen come from and the carbonic acid?" The answer given was to the effect that the oxygen was derived from the air, and the carbonic acid passed from the blood. In each case the candidate was contradicted, and was told that the oxygen combined with the carbon of the blood in the lungs. This took place at the anatomy table.

Mr. Wilkinson.—Was it at my table?

Mr. Hunting.—No.

The President endorsed Professor Spooner's views as to its being the duty of the profession to assist the Colleges in affording opportunities to students for acquiring a practical knowledge of their duties. He himself had apprentices to teach them practical knowledge, and it was the duty of every practitioner to do all he could in the same direction. He made this announcement thus publicly to this Annual Meeting of the profession, and through it to the profession in general, to call their attention to the great importance of receiving and teaching youths the practical knowledge of their profession.

The students of the Highland Society lately expected to be practically examined by the Board of the Royal College of Veterinary Surgeons, and they, therefore, more carefully prepared themselves than was usual, and the consequence was they passed with greater éclat than ever. Although many of them had not had an apprenticeship education, they strove to attain, and did attain, the necessary knowledge. He believed this would be the effect in most cases. The students knowing the sort of test they would have to undergo, would make greater efforts, and by some means or other prepare themselves for it.

Mr. Gowing said he had no doubt but that the advancement of the profession had been prevented by the unfit state in which many had been sent out to practise. The sooner the new kind of examination was carried out the better.

Mr. Naylor regarded the practical examination as of far more importance than any apprenticeship clause could possibly be. He allowed his students to go to the Agricultural Society at Cirencester previously to going to the schools. It was also of the greatest importance that there should be some method by which the young men could see pauper patients, and be made more acquainted with general practice. By attending an agricultural college, where they might acquire a knowledge of botany, the students would be infinitely more benefited than by any apprenticeship. Pauper patients had been received in Edinburgh for years.

Mr. Smith expressed his approbation of the report. He was only sorry that the subject of the practical examination and the preliminary examination was still somewhat in abeyance.

Mr. Wilkinson said the principles of these two great movements had been adopted not only by the Council itself, but also by the different gentlemen who presided over the schools. The only matters in abeyance were the details.

The report was then unanimously adopted.

Mr. Ernes suggested that in future the report should contain the number of times that each member of the Council had attended the meetings.

The following gentlemen were then proposed as members of the Council:

Mr. Robinson,
,, Wilkinson,
Professor Spooner,
Mr. Coates,
,, Broad,
,, Clement Lowe,
} proposed by Mr. Ernes.

Mr. E. C. Dray,	proposed by	Mr. Hunt.
„ Cowie, „ Silvester,	„	Professor Spooner.
Professor Brown, Mr. Morgan,	„	„ Simonds.
„ J. R. Cox,	„	Mr. Stanley.
„ Helmore,	„	„ Lawrence.
„ Smith,	„	„ Cartwright.
„ Broughton	„	„ Hunting.

The result of the balloting was—

Mr. Wilkinson	64	Mr. Dray	24
Professor Spooner	62	Professor Brown	17
Mr. Coates	46	Mr. Boughton	17
„ Robinson	44	„ Lowe	16
„ T. D. Broad	41	„ Cox	14
„ Silvester	32	„ Smith	8
„ Cowie	25	„ Helmore	7
„ Morgan	24	„ Lawson	4

Mr. Wilkinson, Professor Spooner, Mr. Coates, Mr. Robinson, Mr. T. D. Broad, Mr. Silvester, and Mr. Cowie, were declared duly elected.

It was then decided by lot that Mr. Silvester was to fill the vacancy caused by the death of Mr. Lawson.

The proceedings then concluded.

[The fulness of the preceding report renders it unnecessary for any additional remarks of our own on the doings at the annual meeting. We have, however, to add that at the dinner, which took place in the evening, the profession was not so well represented as it ought to have been. Not more than forty members could be found to muster around the festive board from town and country. Upon the whole, the provinces were better represented than the metropolis, which is surprising, seeing that something like 150 members of the profession are practising in and around London. The chair was occupied by the President, who was supported on his right and left by the teachers of the English and Scotch schools, the Veterinary Surgeon-General to Her Majesty's Forces, the Treasurer of the College, some of the members of the Court of Examiners, and a few Army veterinary surgeons. The vice-chairs were filled by Messrs. Stanley, Birmingham, and Silvester, St. Alban's.

The greatest conviviality prevailed, and the general character of the speeches showed that at least those who were present were fully resolved to maintain the dignity of the profession, by sparing no exertion to bring well-educated and practical members into its ranks.—Eds.]

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The usual quarterly meeting of this Society was held in the Committee Room at the Mechanics' Institute, Leeds, on Thursday, the 21st April.

The President, Mr. James Freeman, in the chair.

There were also present—Messrs. Anderton, Cuthbert, Walker, Broughton, Josh. Freeman, Dray, Fallding, P. Smith, Taylor, Bale, Faulkner, and Patterson.

Apolcgies for non-attendance were received from Messrs. Greaves, Pratt, Carter, John Freeman, Fearnley, and Cooper.

The minutes of the last meeting were read and confirmed.

The Secretary read letters which he had received from several secretaries of veterinary medical societies, concurring with the spirit of Mr. Fearnley's resolution.

The Secretary nominated Mr. Charles Sutton, M.R.C.V.S., of York, for election as a member of the Society.

Mr. J. W. Anderton then read his paper upon the Diseases of Stomachs in Cattle, detailing the causes, symptoms, and treatment of the various affections with the utmost minuteness. A very practical and interesting discussion followed, in which all the members present joined.

An unanimous vote of thanks was awarded to the essayist.

Mr. Wm. Taylor, of Wetherby, kindly consented to read a paper at the next meeting in July.

Wm. Broughton,
Hon. Sec.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

The twenty-fifth quarterly meeting of the above Association was held at Mr. Gray's, Adelphi Hotel, on Friday, April 22nd, 1870, at four o'clock in the afternoon.

The members present were:—Messrs. D. Dudgeon (President); D. Macgregor, Bedlington; R. Brydon, Seaham; W. Marshall, Glanton; A. Mann, Wingate; W. Temple, Chester-le-street; and the Hon. Secretary.

The minutes of the last meeting were read and confirmed.

Letters of apology were received and read by the *Hon. Secretary* from Professor Armatage, and Messrs. C. Stephenson, Mr. Hedley, T. Wormack, who were unavoidably prevented attending the meeting. In the absence of Professor Armatage, the essayist, the *President* called upon the Secretary to read his paper on "Pleuro-Pneumonia."

The essay was listened to with marked attention, and gave rise to considerable discussion, at the conclusion of which *Mr. Dudgeon*, in a few able and appropriate remarks, proposed that the Secretary be instructed to write Mr. Armatage and thank him for his very able paper, the proposition seconded by *Mr. Mann*, and carried by acclamation. The proceedings terminated with a vote of thanks to the Chairman.

JOHN MEIKLE.
Hon. Sec., South Hetton, Durham.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE twenty-fourth quarterly meeting of the Liverpool Veterinary Medical Association was held on Friday evening, the 13th of May, at six o'clock, at the Medical Institute, Hope Street, Liverpool, Thomas Greaves, Esq. (P.R.C.V.S.), President, in the chair.

Present—Messrs. Leather, Proctor, Morgan, Ackroyd, Harwood, Heyes, Liverpool; Smith, Ormskirk; W. C. Lawson, Woolton; A. Lawson, Bolton; W. A. Cartwright, Whitchurch; Whittle, Worsley; Storrar, Chester; Woods, Wigan; and the Secretary.

A letter from Mr. P. Taylor, and telegram from Mr. Thomas Taylor, were received.

The minutes of the previous meeting were read and confirmed.

Mr. Joseph Leather then read the following paper on "Indigestion in the Horse."

It is not my intention to waste your time with any lengthy introduction, nor do I intend to make any apology for bringing before you the important subject of indigestion in the horse.

My means of information being very limited, should I fail to perform my task in as lucid and comprehensive a manner as it might be done, I must ask you to accept the will for the deed.

In human medicine there are few subjects on which more has been written, and in veterinary medicine less, than derangement of the digestive functions. I am not aware of a single veterinary author in this country who has dealt with it in anything but the most trivial manner; therefore, what I am about to introduce this evening is mainly the result of my own observations.

It is true the horse is not subject to anything like the variety of gastric derangements that man is; although living in an artificial state, and on food in a great measure artificially prepared for his use, he is not allowed, like man, to overgorge his stomach, and derange its functions by the excessive use of brandy and water, cigars, &c., but, as a rule, has his food and water carefully dealt out to him in such quantity and quality as will generally insure him against dyspeptic attacks. Nevertheless, circumstances do occur, and those by no means rare, when the necessary attention is not

paid to his diet, and serious derangement of his digestive apparatus is the immediate consequence. Before dealing with indigestion, I shall endeavour to describe to you, in as few words as possible, the process of digestion.

In the horse, as in all other domesticated animals, the digestive apparatus is constituted of a membranous and contractile canal, which extends under the vertebral column from the head to the posterior part of the body, or, in other words, from the mouth to the anus. This tube is lined by a mucous membrane, the organization and functional properties of which, in its abdominal section, are of the greatest importance, being the principal seat of the essential phenomena of digestion; whilst the other parts, such as the mouth, pharynx, and œsophagus, only serve to take, to prepare, and to introduce the alimentary materials.

Digestion may be said to be the process by which those parts of the food which may be employed in the formation and repair of the tissues, or in the production of heat, are made fit to be absorbed, and added to the blood. Pressed by hunger and thirst, sensations which express the necessity of repairing the general and continuous waste of the system, the animal seizes the food which he meets with, or is given to him; previously, however, he takes care to subject it to an examination by sight and smell. Once in the mouth, the sense of taste must be satisfied; whatever is offensive is rejected, the residue is ground down by the teeth, and, while undergoing this process, becomes thoroughly impregnated with saliva, and is thus reduced to a soft pulpy mass, which very much facilitates the next move, namely, that of deglutition, or the passage of the food from the mouth to the pharynx into the œsophagus, from thence to the cardiac end of the stomach, where it is mixed with a quantity of mucous, which prepares it to be acted upon by the gastric juice of the true digestive, or pyloric end of that organ; by the agency of this fluid, and the movement of the stomach, it is reduced to a semifluid consistency, and converted into a uniform pulp called chyme; it is then transmitted through the pylorus into the duodenum, and there mixed with bile, and the pancreatic secretion and intestinal mucous. It is then in a fit state to have its nutritious portion taken up by the lacteals, which form a closed system of vessels upon the mucous surface of the intestines, and to be carried by them to the blood, while the indigestible or excrementitious part is moved onward by the peristaltic motion of the bowels, and in due time expelled by the anus.

Having thus gone over, in a very brief manner, the healthy functions of the alimentary canal, I am brought to the more immediate subject of my paper,

Indigestion.— In order that digestion may be perfect and easy, it is requisite that the food should be in a state of minute division. A weak stomach acts slowly or not at all, on tough masses of solid food, and horses, like men, have weak and dyspeptic stomachs. The greedy feeder swallows a great part of his food half masticated; the cribber frequently distends his stomach and bowels with gas. In

the former, the delayed masses undergo spontaneous changes, which are promoted by the mere warmth and moisture of the stomach, gases are extricated, acids are formed, and the half-digested mass passes undissolved into the duodenum, and becomes a source of irritation during the whole of its journey through the intestines. In the latter, he distends his stomach and bowels so frequently with air, as to weaken the whole of the digestive powers, and to render him a dyspeptic subject. His rough coat, tight skin, and emaciated frame, prove incontestibly that his food passes through the alimentary canal without undergoing due conversion, or without his deriving that benefit from it which the healthy animal does.

I will endeavour to consider this subject under two heads, namely, the mild form unattended by acute pain, called chronic; the other, which takes place suddenly, the symptoms of which are altogether more violent, and which is perilous to the existence of the animal, called acute. In a state of chronic indigestion, the horse does not thrive as others do, nor is he capable of doing the same amount of work; his appetite is fastidious—good, and even voracious at one time, and only indifferent at another; it is sometimes depraved: he is fond of gnawing his rack and manger, is frequently found licking the walls, and even eating the plaster from them; and I have even seen instances where they have actually nibbled at their own excrement. The skin, from sympathy with the alimentary canal, has an unhealthy appearance; the coat stares, and the animal becomes more or less hidebound. The dung has not its natural appearance; at one time it is dark, and at another light coloured, and has a very offensive smell; it is usually voided in small hard glazed balls, and, if examined, will be found to consist of chopped hay and imperfectly changed oats. In the stable this is the usual state of the fæces, but in his weak state the horse is easily excited when at work, and purging is the consequence. The urine is scanty and high coloured.

The ordinary seat particularly of chronic indigestion is the mucous membrane of the stomach and the intestines, and the disease may be defined to consist of a congested state of the blood vessels of that membrane; there is, consequently, a want of the proper secretions, and constipation is the result. This torpid or abnormal state may be produced by many causes, such as irregularity in the quantity and quality of food, imperfect mastication of food in consequence of diseased teeth, or from greedy or ravenous feeding, long fasting from food and water, cribbing and quidding, from irregularity in the teeth, or bots, previous attacks of acute indigestion, or irregular exercise, disease of the liver, &c. &c., these are among the principal causes of indigestion in the horse.

There are few animals in their natural state that are supposed to spend more of their time in feeding than he does; and the fact that he has no biliary receptacle proves the necessity of his doing so, and ought to be a lesson to all those who are interested in his well-being, to copy the dictates of nature by feeding him frequently. A long fast renders a horse voracious, like the naturally greedy feeder; his food is bolted without sustaining that thorough grinding with

the teeth so essential to healthy digestion. If allowed, he will sometimes overgorge himself with an indigestible mass to such an extent as to bring about the partial or entire suspension of the movement and secreting power of the stomach, and thus put his life in serious danger from fermentation and rupture. Wheat or green food is most likely to produce this effect; and especially so if he be put to severe work immediately or very soon after feeding. New oats or new hay will also produce it; also debility of the digestive organs, or an unhealthy state of the general system, or it may be caused by excessive fatigue, producing general weakness; cold water given in too great abundance immediately after feeding; by washing the ingesta from the stomach before it has properly chymified, will cause it; allowing the body to cool too quickly when warm; bad treatment, and so will irregularity of work, or nervous excitement of any kind.

The symptoms of the acute form of this disease will depend altogether upon its particular seat. If the horse has overloaded his stomach he will have excessive nausea, expressed by the drooping head, turning up the nose, attempts to vomit, eructation, a slow, weak pulse, and great prostration and heaviness, distension of the abdomen, and colicky pains; there may or may not be sympathetic affections of the brain, producing stupor and staggers. There are many cases where this symptom is not present, though the stomach is distended to the utmost; the horse is frequently attacked in the midst of his work, becomes uneasy, and will be down, and at times at full length for a considerable period, the extremities are cold, the visible mucous membranes are not much injected, the bowels are constipated, the mouth dry and clammy, and the horse has a peculiar haggard countenance, which becomes more and more ghastly as the disease advances; should the stomach burst he becomes pulseless, cold sweats break over him, the membranes are pale as in death, he makes frequent attempts to urinate, and to force anything from the rectum, he reels, staggers, and very soon falls headlong into a corner and dies.

Although cases of acute indigestion, such as I have just described, where the disease is altogether confined to the stomach are by no means rare, still the true seat of the great bulk of our acute cases will be found in the cæcum and colon, that mighty receptacle, which might indeed be called the horse's second stomach, for it is indisputable that large masses of nearly indigestible matter lodge there, no doubt for the wise purpose of extricating from it the last particles of its nutritive properties, and it is natural to expect that where there is the greatest accumulation of aliment, there should be the most frequent derangement of function, and so we find it, for in large practice the treatment of this form of indigestion becomes almost a daily occurrence. The large masses so frequently accumulated in this part of the bowels, in the heavier class of animals particularly, becomes a frequent source of irritation, producing acute enteritis, but far more frequently that form of indigestion, so well known to every amateur in veterinary science, under the designation of flatulent colic. The causes of this form of indiges-

tion are nearly the same as those which produce it in the stomach, and which I have enumerated before, but the most common are, eating green food to satiety; if wet the danger is greater, and if wet with white frost, most dangerous of all, all kinds of new corn, from their greater tendency to fermentation, or new hay, or large masses of indigestible matter of any kind, which has been imperfectly chymified, from a defective state of the stomach. If the horse be attacked in the stable, he ceases to eat, and seems to feel a disgust for all species of food and drink, the head is lowered and occasionally thrown from side to side; if he is at work he becomes suddenly heavy and idle, or works with more precipitation than usual, he stops, scrapes with his fore feet, and makes some contortions, and strives to lie down, consents to continue his journey only when excited by the voice and whip of his driver; he does not go far before he stops again, looks at his belly and groans, strikes at it with his hind feet, lowers the head and neck, and makes another effort to lie down, in despite of whip or voice.

His driver, however, will now find it necessary to get him into the stable, or the establishment of a veterinary surgeon, with as little delay as possible; very soon the disease becomes aggravated, the paroxysms of pain become more frequent and violent, the horse is out of breath, and covered with sweat, he lies down and rolls from side to side, the pulse as yet not much disturbed, except during the paroxysms, the belly is swollen, the nostrils are distended and the whole frame seems to quiver with agitation; later on he sustains himself with more difficulty, spreads his legs to support himself upright, and will often be found to lean against the wall for support. He now lies down with more caution, he dreads the danger in doing so, he often stretches himself, and makes vain efforts to dung and to urinate, feels a desire to vomit, manifested by the elongation of the head and neck, he frequently belches up gas, which is sometimes accompanied with liquids, mixed with particles of food, which escape by the nose and mouth. The swelling of the belly now augments with fearful rapidity, the right flank becomes elevated, the countenance expressive of the most intense suffering, the pulse is nearly imperceptible, he is now nearly insensible to everything that is round him, and to everything that you do to him, except, perhaps, that he will refuse to take any draught with all the energy with which he is still capable. The anus, forced out by the intestines, forms a sort of soft tumour which elevates the tail. The skin is now covered with a cold sweat, and the pulse completely gone; the air can scarcely penetrate the respiratory organs, the blood circulates with difficulty in the vessels, asphyxia becomes imminent, the animal staggers and may fall heavily; sometimes he is relieved by sitting on his quarters like a dog, but this relief is deceptive, it is the result of rupture of the stomach, intestines, or diaphragm, allowing displacement of gas. A moment after he becomes comatose, there is no further relief for him, his vital energy is exhausted, and he dies.

I now come to the treatment of the various forms of digestive

derangements, which I have endeavoured to describe in this paper; and in doing so, it will be necessary that we consider carefully the causes by which they are produced. In all cases, but particularly in those of the milder form of indigestion, much may be learned from the groom, or stable attendant, and it is of the utmost importance to the success of our treatment, that as much of the history of the case be got from him as possible.

If the horse has been irregularly fed, or his work more than ordinarily severe, he should have absolute rest, change of diet, a slight dose of physic, and a few vegetable tonics; if the cause is greedy feeding, have his corn ground, hay chopped, and a muzzle put on at night, to prevent him filling his belly with indigestible matter; if he is a cribber, let him wear a strap round his neck, or have the manger removed and feed from the ground; if from irregularity of the teeth the diseased ones should be removed, or the protruding part cut off, or rasped down; if produced by bots, or other parasites, prescribe for their removal, and the disease will subside. Indeed, many of the milder cases of indigestion may be cured by rest, change of diet, and stable management; the body and legs should be kept warm with clothing and bandages, the stall or box well littered and kept clean, the food given often and in small quantities, in summer green food, or a run at grass, and in winter carrots and bran mashes, mixed with small quantities of barley or malt well boiled, occasional small doses of physic, say, ʒijss to ʒiij of aloes with ʒjss of calomel, and this to be followed with vegetable tonics, will often be of the greatest service. If the animal bites the walls and eats the plaster, heartburn is present; discontinue his oats and beans for a few days, substitute boiled barley and bran, give the medicine above prescribed, and add to your tonic mass 4 drachms of carb. soda, or prepared chalk daily. Severe purging does harm, but mild laxatives with good nursing, change of diet given in small quantities, with moderate slow exercise, will often be all that is necessary. If the case be an acute one, and the stomach overloaded, it becomes a very serious matter, and it will depend in a great measure, on the extent to which that organ is packed, whether any treatment be of the slightest use.

I have examined horses that have died from rupture of the stomach, and found upwards of forty pounds of food in that organ: the ingesta was nearly dry, and had no appearance of having been acted upon in the slightest degree by the gastric juice; that secretion must have been entirely suspended, as well as the movement of the stomach, by the excessive weight of its contents. Medical treatment in cases of this sort must, I fear, ever prove futile in the horse, but fortunately, they are not all so bad, and plenty of cases will be met with where the stomach is overloaded, but only to such an extent that active treatment is often effacacious. In such cases, the object to be aimed at is the expulsion of the contents of the stomach, and the most natural way is, to rouse that organ to increased action, and to accomplish that I know of nothing better than stimulants and purgatives. Apply mustard, sweating liniment,

or cloths wrung out of hot water, throw up injections, and order the animal as much gruel as he will take.

While the walls of the stomach are so distended, there is no danger of inflammation; should there be any cerebral symptoms, such as heaviness of the head, leaning the head on the manager, or thrusting it against the wall, to the other treatment a good free bleeding should be added. If the disease takes its tympanitic, or gaseous form, the cæcum or colon is its usual seat, the cures for it are innumerable; every quack has his own infallible specific, and most veterinarians have a remedy, which they think nearly a certain cure; but although many cases, no doubt, are cured, still it is beyond doubt many die, and from gaseous distension alone, without a particle of inflammation.

Like the previous case I have dealt with, where the stomach is distended with food, expulsion is the object we have to attain. To have the bowels distended with gas, we must have fermentation, and to have fermentation, there must be a mass of imperfectly digested matter in the gut. All agree in giving the most powerful stimulants, and there are few who don't think it necessary to combine them with some active cathartic—of course the dose of cathartic medicine must be regulated according to the size and strength of the animal—from four to eight drachms of aloes; the horse may be walked about a little, but avoid forcing him to trot, and don't continue in the walking very long.

If the case has been a serious one care should be taken not to allow the horse to work too soon, and his diet should be simply slop. In despite of all treatment, however sound both in theory and practice, our case will sometimes go on until the poor animal seems on the point of bursting.

I have heard of some veterinarians using the trochar, or puncturing the cæcum, but never having tried it myself I cannot speak of the desirability of such an operation.

Gentlemen,—I have now concluded my short paper. However imperfect and uninstructive it may be, I feel confident that some useful information will be derived from the discussion that may follow.

During a general discussion which followed the reading of Mr. Leather's paper, several points of professional interest were touched upon, amongst others, crib-biting as a cause or effect of dyspepsia, the rationale of vomition when it occurs in the horse, vomition as a symptom of ruptured stomach, the use and action of purgatives in the treatment of bowel affections, the treatment of intestinal diseases by the internal administration of turpentine, also by the subcutaneous injection of preparations of morphia.

Mr. John Smith, of Ormskirk, exhibited morbid parts from two cases that had occurred in his practice; the first was the pulmonary viscera of a cow, the lungs of which were found to be slightly tuberculous; the muscular structure of the heart, which, very pale, soft, and much diminished in quantity, was surrounded by and incorpo-

rated with an uniform deposit of yellowish consistent material, not fatty and not appearing to be of a true tuberculous character. The weight of the heart was upwards of 34 lbs.

The second specimen was the uterus of a cow, the lining membrane of which was studded all over with grapy excrescences of various sizes; these abnormal growths also encroached upon the mucous coat of the vagina. *Mr. Smith* stated that the cow had calved about eleven months previous to being killed, and that he considered the disease to be tuberculous, an opinion generally agreed to by the members present. The exhibitor thought consumption in cattle to be greatly on the increase, and attached much blame to agriculturists for breeding from strains known to be predisposed to the disease.

Votes of thanks to the essayist, President, and Mr. John Smith having been accorded, the meeting terminated.

RICHARD S. REYNOLDS,
Hon. Sec.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

THE fifth annual general meeting of the above Society was held in the Waterloo Hotel, Edinburgh, on Wednesday, the 20th April.

The President, P. Taylor, Esq., Manchester, in the chair. The following members and friends were also present:—Prof. Williams, Edinburgh; Prof. McCall, Glasgow; Thos. Greaves, Esq., President of the Royal College of Veterinary Surgeons, Manchester; B. Cartledge, Sheffield; Robinson, Greenock; Cockburn, jun., Glasgow; Paterson, Dumfries; Ferguson, Ayr; Bryce, Stirling; Cumming, Edinburgh; C. Secker, Knaresborough; D. Maclean, Royal Artillery, Jock's Lodge; and the Secretary, G. Morgan, Liverpool.

The minutes of the former meeting having been read and confirmed, the *President* then addressed those present as follows:—

GENTLEMEN,—It is my most pleasing duty to meet you in this great city of learning, to advocate a good and noble undertaking for the honour and welfare of ourselves and of our rising profession. We are a body of scientific men, pursuing a learned avocation, that is attended throughout its practice with more than an ordinary amount of danger; and for its labour—mentally and physically—we are but indifferently remunerated, so that few of us, even though we should be so fortunate as to reach three-score years and ten, amass large or even moderate fortunes; therefore, how wise and necessary it is for us to become more united, so as to form *one* great National Veterinary and Benevolent and Mutual Defence Society, so that we have at hand a combination of veterinary talent and experience, and ample funds, that we can in confidence fall

back upon when we are in sorrow, need, or in want, though I do sincerely hope and pray that none of us may require their succour and aid. But still I conceive it is our bounden duty, when we are in vigour and in good health, to use our talents so as to lay down a substantial and solid foundation, whereby we can, by slow and sure degrees, erect a superstructure that shall redound to our honour and be a glorious monument of our labours and wisdom in this our time, and probably may be, to some of us, a support and comfort if we should unfortunately become disabled, or when we become old. Gentlemen, we cannot erect a greater monument for honour and usefulness than a "Benevolent Fund" for the refuge of our well-deserving but unsuccessful professional brethren, and which shall shield and protect our orphan children, and be a guardian angel to our sorrowing widows. Gentlemen, in our quiet and collected moments, it is our duty to look around us, and behold and see the wisdom and foresight of other scientific societies, and other large bodies of men, combining together to create a benevolent fund. Have not we, even though so young, the right materials of liberality, industry, and indomitable energy to do likewise for ourselves and our noble profession? For the past twelve months our offices have been an honour and, I may say, a sinecure; though I believe each of us would have been animated with the same desire faithfully and honestly to do our duty for the honour, progress, and welfare of our great national society. I am also pleased to say, and having the power of doing so only shows how healthy throughout its various ramifying branches our profession at large has been for the past twelve months, and is at the present time, that we have not had one single case of application to defend any one of our members. Long may this condition of things continue, because, gentlemen, speaking professionally, it not only illustrates our healthy organism, but that this healthy organism will be a means of assisting in reproducing a good and great benevolent fund; therefore, gentlemen, I consider it is the proudest congratulation that I have in my power to make, on resigning my trust to-day, that we, the office-bearers of this great Society, have only been guarding, protecting, and increasing your position financially, and that our labours for the past twelve months have been to us a labour of love, having a noble and grand object in view. We have now come amongst you, on this side of the Tweed, to gather additional power, knowledge, and aid, feeling, as we do, that our noble work is worthy of your kind approbation. Gentlemen, be it our desire to stretch forth the helping hand to the needy in mind and in body; to those who are near and those who are far distant; not grudgingly or of necessity, but cheerfully and zealously. Many, it may be, travel over a rougher road than ourselves; some among ourselves have a more toilsome journey than others; offer your sympathy and render your valuable aid as you may be able, whether by the sustaining hand of benevolence, or the guiding mind of progress; for, gentlemen, depend upon it we shall have our reward by feeling that our labours have been attended with some degree of success in conveying substantial aid to the

silent and sorrowing homes of our poor and destitute professional brethren, their orphans and widows, "comfort and consolation" from our benevolent fund: and, gentlemen, depend upon it it will be much more highly appreciated and valued because it is the noble work of the whole body of the veterinary profession.

The *Secretary* then read the annual report of the Society, from which it appeared that the influence of the society was beginning to be extensively felt; it also alluded in feeling terms to the mournful fact that during the last year no fewer than four of the members had been removed by death, and thirty-five members struck off for non-payment of subscriptions.

The report having been adopted the *Treasurer* then read the financial statement, showing the very prosperous condition in which the Society exists financially.

THE TREASURER'S FINANCIAL STATEMENT.

CASH RECEIVED.	£	s.	d.
Cash in hand May 3rd, 1869	417	9	9
Members' Subscriptions.....	75	1	0
Donation from M.C.V.A. ...	30	0	0
Ditto from John Lawson, Manchester	10	0	0
Ditto from P. Taylor, Manchester	10	0	0
Ditto from T. Greaves, Manchester	10	0	0
Ditto from G. Heyes, Liverpool	10	0	0
Ditto from Hon. M. Mostyn, Ireland	10	0	0
Ditto from Wm. Robinson, Tamworth	10	0	0
Ditto from H. J. Cartwright, Wolverhampton.....	10	0	0
Ditto from Wm. Field, jun., London	10	0	0
Ditto from Wm. Field, sen., London	10	0	0
Ditto from Charles Hunting, South Hetton.....	10	0	0
D. F. Interest, Dec., 1869...	4	17	10
B. F. Interest, Dec. 25, 1869	3	8	2
	£630	16	9

CASH PAID.	£	s.	d.	£	s.	d.
Stationery, as per bill.....				0	15	0
Stamps and Envelopes				1	8	6
Ditto, Secretary.....				1	2	2
				3	5	8
Cash in Bank...	625	18	9			
Cash in Treasurer's hands	1	12	4			
				627	11	1
				£630	16	9
Amount of Defence Fund in Bank.....	328	14	3			
Amount of Benevolent Fund	297	4	9			
	£625	18	9			
Amount now owing				21	13	6
104 Members at this date.						
35 Members struck off the list as defaulters.						
The amount owing by them				88	14	6

April 16th, 1870,

THOS. GREAVES, *Treasurer.*

Audited and found correct,
WILLIAM WHITTLE.

Also a Statement showing every General Balance from the commencement of the Society.

	RECEIPTS.	EXPENSES.	CASH IN HAND.
1866	£22 1 0	£10 3 0	£11 18 0
1867	113 4 6	16 5 0	96 19 6
1868	308 3 0	15 18 2	292 4 10
1869	432 16 8	17 17 3	417 9 9
1870	639 16 9	3 5 8	627 11 1

Donations, Entrance Fees, and Subscriptions to the Benevolent Fund to this Date.

Donations.	£	s.	d.
1867—Mr. James Child, Hackney	21	0	0
„ —Mr. C. Marshall, London	5	5	0
1868—The Lancashire Vet. Med. Assoc	50	0	0
1869—The Liverpool Vet. Med. Assoc	25	0	0
„ —The Edinburgh Col. Vet. Med. Assoc	10	0	0
„ —The Yorkshire Vet. Med. Assoc	30	0	0
1870—The Midland CountiesVet.Med.Assoc.	30	0	0
„ —Ten Members, £10 each, as above	100	0	0
Thos. Walley, West Derby	0	10	6
Alf.Rushall, Bishops Stortford	1	1	0
John D. Overed, Blofield	1	0	0
Henry Richmond, Chorley	0	10	6
	3	2	0
Entrance Fees and Subscriptions, 4 Years inclusive.			
Prof.W.J.T.Morton, Lond.			
„ Williams, Edinburgh			
„ McCall, Glasgow ...			
„ Dalzell, Edinburgh..			
„ Strangeways, Edinb.			
„ J. H. B. Allen, Edinb.			
„ Gamgee, London ...			
Mr. George Fleming, Royal Engineers Train, 1st Class, Chatham			
„ H. King, Melbourne, Derby			
„ T. R. Scruby, Royston	29	9	2
„ H. Fishwick, Gargrave			
„ S. H. Withers, London			
„ J. A. Owles, 6th Drag.			
„ W. H. Coates, London			
„ W. Raddall, Cornwall			
„ E. C. Dray, Leeds ...			
„ C. Taylor, Nottingham			
„ Henry Dawson, 14th Hussars, 1st Class ...			
„ C. Hunting, S. Hetton			
„ W. Cockburn, Glasgow			
„ W. Field, jun , London			
Sundry Sums, being Bank Interest	3	8	2
	£307	4	4

	£	s.	d.
Expenses from the commencement of Society, being calculated at one-third of the whole General Expenses as above, excepting the first year, this Society not existing then	8	7	3
Cash in Bank	297	4	9
„ in Treasurer's hands	1	12	4
	£307	4	4

April 16th, 1870.

The financial statement having been adopted the *President* then moved that in Rule 2 the words "Livery stables and repositories" be struck out; this, having been seconded by the *Secretary*, was carried unanimously.

Considerable discussion then ensued on the propositions moved by the *Secretary* regarding the establishment of life governors in connection with the benevolent branch of the Association.

The following were ultimately carried, having been seconded by *Professor Williams*:—

1st.—"That all donors to the funds of this Association of £10 and upwards, in one sum, be elected Life Governors of the Benevolent Branch."

2nd.—"That any Veterinary Medical Association making a grant of £20 or upwards to the funds shall be entitled to elect one of their members a Life Governor."

3rd.—"That Life Governors be entitled to vote at all meetings of the Benevolent Branch of the Society by proxy, if unable to attend."

Votes of thanks having been accorded to the officers for their services during the past year, *Professor McCall* proposed that the President, Vice-President, Treasurer, and Secretary be re-elected, which being seconded by *Mr. Paterson*, was carried *nem. con.*

On the motion of *Mr. Robinson* a vote of thanks was accorded to the President for his services in the chair.

GEORGE MORGAN, M.R.C.V.S.,
Liverpool, May, 1870. *Hon. Sec.*

TRANSIT ORDER OF COUNCIL.

AT the Council Chamber, Whitehall, the 12th day of May, 1870.

By the Lords of Her Majesty's Most Honorable Privy Council.

PRESENT:—Lord President, Mr. Secretary Bruce, Mr. Forster.

The Lords and others of Her Majesty's Most Honorable Privy Council, by virtue and exercise of the powers in them vested under The Contagious Diseases (Animals) Act, 1869, and of every other power enabling them in this behalf, do order, and it is hereby ordered, as follows:

Preliminary.

1. This Order may be cited as the The Transit of Animals Order of May, 1870.

2. This Order extends to Great Britain only.

3. In this Order words have the same meaning as in The Contagious Diseases (Animals) Act, 1869, save that the term "animals" extends to all ruminating animals and to horses.

4. Article 21 of The Contagious Diseases (Animals) Order of August, 1869, is hereby revoked.

Transit of Animals by Sea.

5. With respect to places used for animals on board vessels, the following regulations shall have effect from and after the thirty-first day of July, one thousand eight hundred and seventy:—

(1.) Every such place shall be divided into pens by substantial divisions.

(2.) Each pen shall not exceed nine feet in breadth, or fifteen feet in length.

(3.) The floor of each pen shall have proper battens or other foot-holds thereon.

(4.) Every such place, if inclosed, shall be ventilated by means of separate inlet and outlet openings, of such size and position as will secure a proper supply of air to the place in all states of weather.

6. Between each first day of November and the next following thirtieth day of April (both days inclusive), freshly shorn shee p shall not be carried on the deck of a vessel.

7. When sheep are carried on the deck of a vessel, proper gangways shall be provided, either between or above the pens in which the sheep are carried.

From and after the thirty-first day of October, one thousand eight hundred and seventy, animals landed from a vessel shall, on a certificate of an Inspector appointed by the Privy Council in that behalf, certifying to the effect that the foregoing regulations, or some or one of them, have not or has not been observed in the vessel, be detained under the supervision of the Commissioners of Her Majesty's Customs, at the landing-place, or in lairs adjacent thereto, until the Privy Council otherwise direct.

Cleansing and Disinfecting of Vessels.

9. Every vessel used for carrying animals shall, after the close of each voyage, and before any fresh cargo is taken on board, be cleansed and disinfected in manner following:

(1.) By the sweeping out of the hold and every other part o the vessel used for animals, and the effectual removal therefrom of all dung and litter, and of all ashes, sand, sawdust, and other matter with which animals or their droppings have come in contact.

(2.) Then by the thorough washing of the same parts of the vessel with water:

(3.) Then by the application to the sides, floor, and ceiling of the hold and to every other part of the vessel with which animals or their droppings have come in contact, of a coating of limewash made by mixing good freshly burnt lime

with water, and containing in each gallon of limewash either one fifth of a pint of commercial carbolic acid, or one fifth of a pint of commercial cresylic acid, or four ounces of fresh dry chloride of lime, such limewash to be prepared immediately before use.

The sweepings of the vessel shall be well mixed with quicklime, and effectually removed from contact with animals.

Shipping and Unshipping places.

10. At every place where animals are put on board of or landed from vessels, provision shall be made, to the satisfaction of the Privy Council, for a supply of water for animals; and water shall be supplied there, gratuitously, on request of any person in charge of any animals.

11. At every place where animals are landed from vessels, provision shall be made, to the satisfaction of the Privy Council, for the speedy and convenient unshipment of animals, and for a supply of food for them, and food shall be supplied there, on request of any person in charge of any animals, at such price as the Privy Council, from time to time, approve.

Transit of Animals by Railway.

12. From and after the thirty-first day of December, one thousand eight hundred and seventy, every truck used for carrying animals on a railway shall be provided with spring buffers, and the floor thereof shall have proper battens or other foot-holds thereon.

13. From and after the thirtieth day of June, one thousand eight hundred and seventy, a railway company shall not allow any truck used for carrying animals on their railway to be overcrowded, so as to cause unnecessary suffering to the animals therein.

14. Between each first day of November and the next following thirtieth day of April (both days inclusive), trucks used for carrying on a railway sheep freshly shorn and unclothed shall be covered and inclosed, so as to protect the sheep from the weather, but shall be properly ventilated.

Cleansing and Disinfecting of Pens and Vehicles.

15. Every pen, carriage, truck, horse-box, or vehicle used for carrying animals on land, shall, on every occasion after any animal is taken out of the same, and before any other animal is placed therein, be cleansed and disinfected in manner following:

(1.) By the sweeping out of the pen, carriage, truck, horse-box, or vehicle, and the effectual removal therefrom of all dung, sawdust, litter, and other matter:

(2.) Then by the thorough washing of the pen, carriage, truck, horse-box, or vehicle with water:

(3.) Then in case of a pen, carriage, or truck, by the application to the floor and to all parts above the floor with which animals or their droppings have come in contact, of a coating of limewash, made by mixing good freshly-burnt lime with water, and containing in each gallon of limewash either one

fifth of a pint of commercial carbolic acid, or one fifth of a pint of commercial cresylic acid, or four ounces of fresh dry chloride of lime, such limewash to be prepared immediately before use.

The sweepings of the pen, carriage, truck, horse-box, or vehicle shall be well mixed with quick-lime, and effectually removed from contact with animals.

Penalties.

16. If anything is done or omitted to be done in contravention of any of the regulations of this Order, the owner and the master or person having charge or command of the vessel in which,—and the owner and the occupier of the place where animals are put on board of or landed from vessels at which,—and the company carrying animals on or owning or working a railway on which,—and also in case of the overcrowding of a truck on a railway, or of the carrying on a railway of sheep freshly shorn and unclothed, the consignor of the animals in respect of which,—(as the case may be) such thing is done or omitted, shall severally be deemed guilty of an offence against this order.

17. Provided, that no person shall be liable to a penalty under this Order in respect of sheep as freshly shorn, where it is shown that the sheep have not been shorn within sixty days before the time of the commission of the alleged offence.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF COMMONS, *May 24th.*

CATTLE PLAGUE.

Sir SELWYN-IBBETSON asked the Vice-President of the Council whether the report which had appeared in several of the papers on the 23rd, to the effect that the cattle plague had broken out in the department of Doubs, in France, was correct, and that, in consequence, the Government of Neufchâtel had prohibited the importation of French cattle; and, if so, whether the Privy Council had taken any, and what, steps to prevent the importation of diseased cattle into this country?

Mr. W. E. FORSTER said that a report had appeared in the papers on the 19th of April to the effect that the cattle plague had broken out in a department of France. The authorities at the Privy Council lost no time in communicating with the Foreign Office, and a letter was addressed to Lord Lyons, asking for information; but, as no answer had yet been received, the probability was that the report was unfounded. Orders had also been sent to the Customs to keep a sharp look-out for animals coming from France; but he thought there need be no apprehension of danger, inasmuch as no animals had arrived from France since the 27th of April.

Veterinary Jurisprudence.

HARLESTON, NORFOLK.

SHEEP SCAB.—CONVICTION UNDER THE CONTAGIOUS DISEASES (ANIMALS) ACT.

At the Petty Sessions on Friday, April 22nd, before the Rev. G. France, Sandcroft Holmes, George Holmes, and A. A. Bouverie, Esqs., *Captain Norton Robert Cartwright*, agent to Colonel Sir Robert Shafto Adair, Bart., of Flixton Hall, was charged under the Contagious Diseases (Animals) Act, 32 and 33 Vic., 70 ch. and 57 sec., with having on the 31st March removed, or caused to be removed, along the highway a number of sheep, ten of which were suffering from a disease called scab, such disease being infectious; and the same defendant was also charged with having allowed such diseased animals to be offered for sale in a public place, such place being the Cardinal's Hat Inn, Harleston.

Superintendent Ward said that on the 30th March last he visited a repository sale at Harleston, where he saw some sheep that were suffering from scab. He inquired who they belonged to, when he was told that they came from Flixton Hall.

Mr. George Mulcastor, farm bailiff to Captain Cartwright, said he was subject to Captain Cartwright's orders. He came to the Flixton estate in September last, and since that time the sheep had been dressed twice. He told Captain Cartwright in the last week in January that the sheep were affected with the scab. He thought that the dressing had perfectly cured the disease, and had the sheep been left to him he should have sold them at home. There was no public inspecter called in to look at the sheep. He told Captain Cartwright, in January, that he did not think that the dressing would cure them, and since then all of them had been "patched."

In cross-examination by *Captain Cartwright*, witness said that it was not the custom to call in any professional gentlemen to inspect the flocks. He told the defendant that they must sell the sheep in another month, when he received orders to take them to Durrant's sale.

Edward Dean, shepherd, said he drove the sheep according to the orders of Mr. Mulcastor, to Mr. Durrant's sale. About twelve days previous to the sale, the sheep were suffering from scab.

Mr. Herbert Buckenham, veterinary surgeon, said he inspected the sheep on the 30th of March, at the repository, and found some of them suffering from the scab.

Mr. Daniel George Hunting, government inspector of the district, inspected the sheep on the 31st of March, and found ten of them in an active stage of scab. In cross-examination witness said that the disease would be increased by travelling along the road to the sale.

For the defence it was stated that it had not come to defendant's knowledge that the sheep were suffering from the disease at the time. After half an hour's deliberation, the magistrates were of opinion that there had been negligence by the servants, and, therefore, inflicted half the penalty, which was £20, and costs.—*Norwich Mercury.*

SALE OF A GLANDERED HORSE.

CONVICTION UNDER THE CONTAGIOUS DISEASES (ANIMALS) ACT.

At the Bradford Borough Court, on Saturday, May 14th, *John Sowden*, horse dealer, of Queensbury, was charged by Inspectors Dobie and Hodgson, with committing an offence against the Contagious Diseases (Animals) Act, by exposing a diseased horse for sale. Mr. Terrey appeared for the prosecution and Mr. Berry for the defence. On the 24th April, the defendant exposed a mare for sale in the Bradford market, the animal being at the time ill from glanders. She was sold to Thomas Hollingdrake, who shortly after he had got possession of the animal found her to be diseased. Hollingdrake said in evidence that he did not think that the defendant knew that the mare was suffering from glanders when he sold it to him.

Mr. Joseph Carter, veterinary surgeon, stated that the mare was suffering very much from glanders; it was one of the worst cases which had ever come under his notice. The defendant, if he had not had much experience of horses, and had not been long in possession of the animal, might not be able to identify the disease.

There were a number of witnesses for the defence, which was in effect that the defendant had only had the mare one day in his possession, and in that short time had not discovered that the animal was suffering from glanders, but supposed it to be affected with cold. Sowden was fined £5, and £3 4s. expenses, with the alternative of two calendar months' imprisonment.

REGIMENTAL VETERINARY SURGEONS.

By "Inquirer."

In addressing you upon this subject, I omitted in my last letter a very important part of my task, which, with your permission, I will introduce now. In wishing to learn if army veterinary surgeons on full pay, and on active service are, by the rules of the service, permitted to practise *privately*, to the detriment of those members of the profession who are perhaps struggling for a livelihood, I might have said that I am aware of this being done in many instances; and more, that the farriers of the regiments, or detachments, are actually employed by persons to perform operations, and otherwise practice the art of veterinary medicine. A few years ago, I learned that a farrier undertook to cure a glandered mule (this man was in the Royal

Artillery), he attended the animal for some time (after I had condemned it for slaughter), and at length gave it up as hopeless. I was informed that several horses belonging to the battery to which this farrier was attached, were attacked with glanders, and were destroyed. As to the truth of the *latter* I cannot, of my own knowledge, vouch, but there is but little doubt of it.

Within the past few months, I have frequently observed a farrier walking about the town, sometimes with a bottle of embrocation in his hand, at others with a can of foot-dressing, and it has so happened that I have seen him go into and out of stables, where I knew something was amiss.

If the rules of the service are such that veterinary surgeons can practise privately, the sooner they are altered the better; and, as to the farriers being allowed the privilege, is a step in a retrograde direction.

VETERINARY COLLEGE, EDINBURGH;
May 10th, 1870.

SIR,—I have to complain of the unbusiness-like manner in which the examination of the Edinburgh and Glasgow students is reported in your last number. Thirty-one candidates are there named as being successful; but no attempt is made to separate those of Edinburgh from those of Glasgow, although Dr. Dunsmure had promised me that such would be done. I have therefore to explain that out of this number (thirty-one), nine only were from the Glasgow College; and the remaining twenty-two from the Edinburgh Veterinary College. Trusting you will see fit to remedy this mistake of the Secretary of the Royal College of Veterinary Surgeons in your next number,

I remain, sir, &c.

W. WILLIAMS, F.R.S.E.,
Principal.

To the Editor of the 'Veterinarian.'

ARMY APPOINTMENTS.

WAR OFFICE, PALL MALL; *May 17th.*

VETERINARY DEPARTMENT.—First-Class Veterinary-Surgeon William Death, from the late Military Train, to be veterinary-surgeon. First-Class Veterinary-Surgeon Henry Dawson, from the 14th Hussars, to be veterinary-surgeon. First-Class Veterinary-Surgeon John James Channon, from the late Military Train, to be veterinary-surgeon. First-Class Veterinary-Surgeon George Longman, from the late cavalry depot, to be veterinary-surgeon.

ERRATUM IN NO. 509.

At page 355, line 18, for "the tendon *begins to commence*" read "the tendon *begins*."

THE

VETERINARIAN.

VOL. XLIII. No. 511. JULY, 1870. Fourth Series. No. 187.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from p.* 431.)

Blood-vessels and Nerves of the Foot.—The blood-vessels which go to and pass from the foot are chiefly remarkable for their number, their almost endless communications with each other, by which they form loops, arches, and circles laced and interlaced in the most intricate and surprising fashion: arteries coalescing with arteries, veins running into veins, and in such a manner that, unless the main branches some distance above the foot are interrupted, accidentally or intentionally, the circulation of blood is efficiently maintained by many independent communicating channels should the current be suspended in any of the minor tributaries.

Arteries.—The chief arteries supplying the foot with the vital fluid are two in number—one running perpendicularly on each side of the fetlock, below which, on the front of the large pastern bone, branches are given off to form two sets of intercommunicating circles, one behind, the other before; these are ceaselessly uniting by smaller vessels above and below tendons, ligaments, capsules, and sheaths of tendons, until the upper pastern bone is completely festooned with the tortuous wreaths, which diverge more or less over the coronary bone.

The large trunks still continuing downwards, give rise to another beautiful series of inosculating twigs spread over the whole surface of the coronet. Nothing can be finer than

the disposition of these vascular arcades, composed as they are of ever-varying-sized tubes intertwining closely and gracefully with each other, all throwing off an infinite number of arborescent filaments which graft themselves on to other branches; and yet, while these are growing less and less in dimensions by this strange process of ramification and interweaving, the aggregate diameter of the whole far exceeds by many times that of the parent trunks. This network encircles the coronary bone, lies closely beneath the skin, covers the inside and outside of the lateral cartilages, spreads over the flexor tendons behind, forms a junction with the vessels from the opposite side and with other offshoots from the principal tubes which go to supply most important textures with nutrition, sometimes spreading under a dense membranous web of tendons, at other times doubling gracefully around it; or monopolising the whole surface of one texture by its wide dimensions, and then contracting suddenly to suit the position, form or requirements of another—the multiform loops dwindling into a few of greater capacity, only to be again opened out widely into a maze of throbbing canals apparently bewildering by reason of their tortuosity and entanglement, but in reality simply and methodically arranged throughout.

In this way the large artery on each side of the foot meanders by a thousand coalescing channels over the exterior and interior of the organ, till at length it terminates in two branches, the larger of which, ensconcing itself in the groove on the side of the os pedis, creeps round to one of the larger openings in the posterior concavity of that bone, passes into the solidly constructed tunnels I have before described, and uniting with the analogous vessel of the opposite side, constitutes an interosseous semilunar shaped mesh more wonderful, perhaps, than those which are not so concealed from view. This is broken up into a double series of vascular tracery minutely wrought, the first ascending to make an exit by the multitude of openings on the outside of the pedal bone, there again to originate another finely netted expansion—the "laminal arteries;" while the second series descend in an eccentric fashion, escape through the larger apertures seen on the lower or convex margin of the bone, then climb upwards by a crowd of branches (the "ascending laminal arteries") to make yet another reticulated covering of vessels by meeting each other in cross twigs. This finally resolves itself into an artery (called the "circumflex"), which courses along the under edge of the bone, transmitting, as it proceeds, a countless number of minute branches to the sole,

which looks as if covered with a crimson gossamer web or a tangled thicket of coral-coloured vegetation.

The other chief division of the plantar artery is also imbedded in the lateral groove of the pedal bone, but its subdivisions chiefly go to make up extensive capillary communications on its anterior face, and branches to the heels, and finally return to the interior of the bone to join the arrangement of vessels in the semilunar sinus.

We will recur to this complex but beautiful arrangement when we have glanced at the veins of the foot, in order to show the intention and the value of such a widely-extended disposition.

Veins.—The general arrangement of the veins of the horse's foot, springing as they do from the terminations of the arteries, or rather from those exceedingly fine tubes intermediate between the veins and arteries called the "capillaries," is not unlike the disposition of the vessels we have just been describing as carrying blood to that organ. Serving as channels for the removal of the vital fluid after it has served its purpose and become deteriorated, the veins present perhaps a still more curious and interesting appearance, from their superficial arrangement being somewhat different to that of the arteries. They seem to be more interwoven with each other than the arborisations of the latter, to be more numerous and comparatively larger, and the superficial have but little communication with the deeper seated veins. When they have been distended after death by the injection of some warm fluid substance that solidifies on cooling, then removed *en masse* by prolonged maceration and dried, the whole external venous system looks not unlike a fine but close net moulded to the shape of the foot. This is more especially apparent on the sole, where their diameter is very regular, and where they are woven into the substance of the fibrous tissue which covers the bone, and which differs from the ordinary covering noticed elsewhere.

But though more numerous, of larger calibre, and more isolated—the superficial from the deep-seated—than the arteries, they generally follow these in their course as their satellites; and hence we have a large and slightly undulating vein accompanying the circumflex artery around the convex border of the pedal bone. The solar veins, or veins of the sole, then, empty themselves chiefly into this vein, which may aptly be termed the "circumflex," and from it many trunks jet upwards towards the face of the bone, to give rise to a most notable network of vessels so closely and so evenly disposed in some situations as to leave scarcely any interspaces,

climbing as they do through the meshes of a fibrous framework (which has been named the *reticulum processigerum*) overlaying the anterior aspect of the os pedis. From their situation and their relations to a peculiar structure which will be examined immediately, this network has been called the "podophyllous" or "laminal plexus." Extending to the coronet, and encircling the junction of the second and third phalanges, the circumference of the cartilages, and the coronary cushion, like a close and evenly twined wreath, this mesh, augmented by some veins from the inner parts of the foot, is designated the "coronary plexus." This covers the upper part of the pedal and the whole of the coronary bone, the lateral cartilages, and the heels of the plantar cushion, looking in some preparations not unlike the thick clustering tubers of some aquatic plant, the central ramuscules standing much closer than those at the sides. The latter, which envelope the outer and inner aspects of the cartilages, are very numerous and large. All these ramifications converge on and open into a large sinuous vein that surrounds the upper surface of the pastern, and this again empties itself into the digital vein, which ascends the limb along with the artery, one on each side.

In the interior of the os pedis, the deep-seated veins follow pretty closely the distribution of the arteries, entering the semilunar sinuses, often communicating with each other, and spreading themselves over the internal structure of the bone. As before mentioned, however, they differ from the arteries in remaining isolated from the superficial veins—those which wind and twist over the external surface in such a surprising manner. Above, they proceed to augment the volume of the coronary plexus.

Lymphatic vessels of the Foot.—Sharing to some extent in the nutritive operations carried on in the horse's foot, we cannot leave the consideration of the apparatus destined for the accomplishment of these without bestowing a glance at the vessels which convey that colourless fluid whose exact nature or uses are as yet debatable, the "liquor lymphæ," from the foot and limb into the circulation. Though the actual presence of these canals within the lower cavity of the hoof has not, so far as I am aware, been positively ascertained or directly demonstrated, yet there can be no doubt as to their existence in this region. It is certain that a large plexus or network of lymphatics extends itself in the cellular tissue and beneath the skin enveloping the large and small pastern bones, some of whose principal branches are plainly visible to the naked eye, and that these empty themselves, following the course of the

artery and vein on each side, into larger tubes running along the flexor tendons above the fetlock.

It is sufficiently obvious that the lymphatic network around the pastern must be constituted by confluent vessels ascending from the highly vascular textures of the foot, in the same manner as the venous reticulations that are disposed in this manner beneath and around the coronet. Analogy also tends to demonstrate, indirectly, that such a richly endowed organ as the foot must be provided with an apparatus which is found nearly everywhere else, and particularly in the skin, and which appears to play an important auxiliary part in the growth and renewal of vital textures.

We might even be led to infer that this lymphatic circulation is very largely developed in the organ from the fact reported of Geiger collecting from three to five pounds of lymph every day from a wounded lymphatic vessel in a horse's foot. And another proof is furnished in the case of certain diseases, such as inflammation, suppuration, and ulceration, sometimes affecting the whole of the lymphatics of a horse's limb in consequence of an injury to the lower aspect of the foot.

(*To be continued.*)

POISONING OF A DOG BY STRYCHNIA.

By Messrs. Gowing & Son, M.R.C.V.S., Camden Town.

On the 12th of May we were requested to visit a dog belonging to a gentleman in Delancey Street, Camden Town. The dog was a large one, between a pointer and mastiff, and from his attachment to his master, and his docile temper, he was the pet of the family. He had been taken out early in the morning for exercise full of health and vigour. Upon his return home about twenty-five minutes afterwards he was observed to look anxious and dispirited; after a time he showed other signs of indisposition; tremors occurred, and great prostration ensued, the dog soon fell upon his side and became convulsed. When first seen he was in the following position: The back was slightly arched with the fore legs straightened and the hind legs extended backwards; the muscles were very tense and rigid; the animal uttered a low piteous whine of a long duration terminating in a moan of a distressing character. He raised his head and looked anxiously as we stood watching him. There was twitching of muscles at intervals, and sometimes the paroxysms were

severe. The dog was evidently conscious, as he recognised his mistress. At our request the son of the lady endeavoured to flex the hind leg, but from its rigid condition there was no possibility of doing so, and the attempt brought on the muscular twitchings previously alluded to. At one period the animal struggled violently and attempted to rise, and at a moment when he was not observed he made a sudden convulsive movement, and threw himself over on his other side with his head in the opposite direction to that which it had previously occupied.

The piteous long contracted whine and moaning were continuous, and the spasmodic twitchings recurred at intervals; these were aggravated whenever the dog was approached or touched. From the evidence before us, there could be no mistaking the case; it was one of poisoning by strychnia, the true pathological effects of which were developed.

The owner was informed that the case was of a serious character, and that if the dog had taken a sufficient quantity of the agent, death must inevitably take place. As, however, some time had elapsed, viz. two hours, there was some hope of a favorable result, and it was deemed expedient to administer an emetic, under the impression that all the agent might not have become soluble, and any poisonous matter that remained in the stomach had better be ejected; for this purpose half a scruple of the sulphate of zinc was given, this agent being preferred because it was not so depressing in its effects as the tartarised antimony, also because it would exert some astringent action. The mixture was given in slightly tepid water, and vomition took place in the course of an hour. As an antidote a mixture of three grains of tannic acid to one ounce of water was given, and this was to be repeated when required, but in two hours afterwards the dog was so much relieved, that the further employment of the tannic acid was considered unnecessary; nature, assisted by the emetic, was working her own way towards recovery.

Shortly after this the dog rose upon his legs, and although his head was depressed and his gait staggering, he was so far enabled to support himself as to walk in the garden, where the fresh air seemed to invigorate him. When the animal was brought into the house and laid upon the sofa he seemed much better, but occasionally the trembling returned; treatment was ordered in the form of cold beef tea and bread, and bread and milk, and on inquiry as late as ten o'clock p.m. he was reported as progressing favorably.

Our assistant called early on the following morning, when the dog was reported to be apparently well, and beyond a

dose of aperient medicine no further treatment was adopted.

The strychnia was supposed to have been taken from some poisoned food that was laid in the garden for the purpose of destroying cats.

We have been induced to forward this history for insertion in your pages, as it tends to show how possible it is that we may deceive ourselves as to the satisfactory action of an antidote, when in reality the recovery is due to the quantity of the poison being insufficient to kill. Our opinion was in the first instance favorable in consequence of the length of time the dog had been suffering, indicating that he had not taken sufficient of the agent to cause death.

It is difficult to account for the action of tannic acid as an antidote for strychnine. May it not in great measure be due to the powerful astringent action upon the mucous membrane and absorbents, preventing further absorption of the poison? It is considered that the tannic acid combines with the strychnia to form an insoluble "tannate of strychnia," but it seems not improbable that the astringent property of the agent may also exert a beneficial influence

---

ON RABIES; ITS PREVALENCE, AND SOME SUGGESTIONS FOR FUTURE INVESTIGATION.

By Edward Nettleship, M.R.C.S., M.R.C.V.S.

In the *Veterinarian* for June is an editorial note on the prevalence of rabies in the north and north-west. I have drawn out the following table (as complete as I have been able to make it) of the cases referred to, partly from published accounts, partly from private information which has been most obligingly afforded me by various medical men, and in particular by Dr. Ransom of Nottingham, and Mr. Worthington, of Wigan. The list of cases (placed as far as possible in chronological order) does not show any new points in connexion with rabies; its only use, if it has any, is to show somewhat in detail that a serious epidemic of rabies is in existence, and possibly to stimulate some of the observers resident in the infected districts to add new facts to our present knowledge of the disease.

Some Cases of Rabies in Man and the lower Animals occurring in the North of England during the last twelve months.

Date of Death.	Date of Bite.	Interval.	Place.	Species.	Bit other Animals. Remarks.	Authority.
1869. "Spring and summer."	—	—	Preston (16 miles from Wigan).	Man ("several persons") and 2 others.	Mr. Arminson (? Dr.) writes that 3 cases occurred in 1869 at Preston	Veterinarian, March, 1870.
1869. Summer (?)	—	14 days the first; others "at varying intervals."	Bradley Hall, Eccleston (9 miles from Wigan).	Sheep (10 of them).	One dog found dead 5 or 6 miles from same place a few days afterwards. No further mischief known to have been done by the same dog.	Veterinarian, March, 1870.
1869. Sept. 13.	1869. July.	2 months (about).	Huddersfield, Yorkshire.	Boy, æt. 3 (J. H. Boothroyd).	"Several cases" said to have occurred near same place about same time; but I have heard only of one which occurred 20 years ago.	Brit. Med. Jour., Sept. 25, 1869. Under care of Mr. Knaggs, of Huddersfield.
1869. Sept. (Shot).	1869. August.	1 month.	Wrightington Hall (5 miles from Wigan).	Dog (2 of them) (yard dogs).	The dog which bit these was shot on the same day, 3 miles from the place. No further mischief known to have been done by the same dog.	Veterinarian, March, 1870.
—	—	—	Newburgh.	Dog.	Bit James Barrow in beginning of November, 1869. Bit another dog when James Barrow was bitten. Perhaps bit heifer.	Brit. Med. Jour., Jan. 29, 1870; Veterinarian, March, 1870.
1870. Jan. (end of).	1869. November (beginning of)	2½ months (about 70 days).	Newburgh.	Man (Jas. Barrow).	— —	Brit. Med. Jour., Jan. 29, 1870; Veterinarian, March, 1870.
1869. Dec. 21.	1869. November (beginning of)	2 months (nearly).	Newburgh (killed in possession of a farmer near Liverpool).	Dog.	Bitten by dog which bit James Barrow.	Veterinarian, March, 1870.
1869. Nov. 29.	1869. Nov. 8.	21 days.	7 miles from Wigan.	Heifer.	Pregnant.	Veterinarian, March, 1870.
1869. Dec. 7 (about).	—	—	Near Wigan.	Heifer.	Pregnant.	Veterinarian, March, 1870.

1869. Dec. 14.	1869. Nov. 8.	36 days.	Coppull, Mr. Chorley (6 miles from Wigan).	Cow.	— —	Veterinarian, March, 1870.
1869. Dec. 15 (about).	1869. Nov. 8 (probably).	—	Parbold Hall (6 miles from Cappull) (? from Wigan).	Bull (calf).	It is not known that this animal was bitten at all.	Veterinarian, March, 1870.
—	1869. Nov. 8.	2 or 3 weeks.	1 mile "further on" from Parbold Hall.	Dog (sheep-dog).	— —	Veterinarian, March, 1870.
—	—	—	Derby.	Dog (retriever).	Bit several other dogs and several persons in or about Derby, Nottingham, and Loughborough, on Nov. 27, 1869. Possibly this dog was bitten about Nov. 8, near Wigan.	Brit. Med. Jour., Dec. 4, 1869.
1870. May 7 (about).	1869. Dec. 29.	4 months.	Nottingham (General Hospital).	Boy, æt. 14.	Bitten by a terrier.	Brit. Med. Jour., May 14, 1870.
—	1869. Dec. 25 (probably about).	—	Nottingham.	Man.	Dr. Ransom writes on March 24 that "2 men have died." The other is mentioned above.	—
1870. Feb. 20 (about).	1869. Dec. 25.	2 months (57 days about).	Nottingham (General Hospital).	Man.	Dr. Ransom writes on March 24, that the dog which bit this man was traced from a neighbouring village, through 20 miles of country and many villages, where it bit many dogs and men. It was first seen at the village at 3 p.m., Dec. 24.	Brit. Med. Jour., Feb. 26, 1870.
1870. March 16.	1870. Jan. 1 (about).	2½ months (75 days).	Stalybridge.	Man (young).	— —	Brit. Med. Jour., March 19, 1870.
1870. Feb. 1.	1870. Jan. 8.	24 days.	Carlisle (or near).	Boy, æt. 7.	— —	Brit. Med. Jour., Feb. 12 and April 30, 1870, p. 451. Mr. Reeves.
1870. Jan. (?).	1869. January.	12 months (about).	Heptonstall.	Man (farmer).	— —	Brit. Med. Jour., Jan. 22, 1870.
1870. April 20.	1870. March 18.	1 month (31 days).	St. Helen's, West Auckland, Durham.	Child, 2 or 3 years old.	— —	Brit. Med. Jour., April 30, 1870.
—	—	7 weeks.	Dundee Infirmary.	Man.	— —	Brit. Med. Jour., Feb. 12, 1870.
—	—	2 years.	Carlisle (or near).	—	Dr. Elliot writes that the case will be published before long.	Brit. Med. Jour., April 30, 1870, p.451. Dr. Elliot.

We want further information on the following, among other matters. *Greatest length of incubation in the lower animals.*—A very imperfect search has enabled me to find six cases in the human subject in which the incubation period was at least a year; the period in one case being 7 years, in another 5 years; possibly, on more careful examination, one or two of these might turn out to be spurious. Dr. Bardsley's case, in which 12 years are said to have elapsed, is very doubtful indeed.

Hereditary Rabies.—It would be most interesting to know whether rabies can be propagated to the fœtus in utero either by a rabid father or mother; the length of incubation of the malady ought to furnish exceptionally good opportunities for determining this point. In the *Veterinarian*, 1839, p. 356, Mr. Hickman, in giving an account of rabies in some ewes, remarks that "the lambs of all the ewes which had yeaned before the symptoms appeared did well; but if the symptoms appeared before they had yeaned, the lambs came dead, or very soon died." Dr. Auzias-Turenne, in the *Recueil* for January, 1869, p. 12, has the following passage, bearing on the same question; he says he has prepared "a statistical account of rabid females and their young. Some women even have been included in this instructive list. I have there found facts which throw light on those of congenital syphilis, which on the other hand elucidate these;" he refers in a note to "a remarkable unpublished memoir by M. Mathieu" on the same subject. It would be most interesting to know whether Dr. Auzias-Turenne has followed out the subject further. (3) *Are there any well-authenticated cases on record of recovery from rabies in the lower animals?* Many are recorded in the human subject, but most, if not all, break down on examination. The reputed recoveries in dogs which I have come across have all seemed doubtful: several are evidently cases of the temporary paraplegia, accompanied (or caused) by constipation, which is not uncommon in this species. (4) *Is rabies more fatal to sheep than to other animals?* Several of the recorded instances speak of numerous sheep dying of the disease after being bitten by the same dog; perhaps in some cases they may have died from the effects of the bites, and not from rabies. (5) *Further experiments on the communication of rabies by herbivorous and omniverous animals* to others of the *same classes* as well as *to carnivora.* Rabies has been communicated in isolated cases by the following non-carnivorous animals—*man* to rabbit (experiments by Mr. Earl about 1830; the nature of the disease in the rabbits was somewhat doubtful in Mr. Earle's opinion); *man* to dog, by M. Majendie, and

again by Dr. Hertwig; *horse* to man, a case referred to by Youatt in the *Veterinarian*, 1831, p. 223, but not given in detail; I have not been able to find the case recorded, and should be much indebted to any one who could refer me to it. *Horse* to dog; Mr. Youatt twice succeeded with this experiment; he does not, however, furnish particulars. (*Veterinarian*, 1831, p. 223). *Ox* to fowl; a single experiment by Dr. Ashburner in 1828. *Ox* to dog; an experiment by Mr. Youatt; no details are, however, given. *Sheep* to rabbit (referred to in *Veterinarian* for June); Professor Simmonds's experiments (*Veterinarian*, 1839, p. 372); the rabbits died on the sixth day after inoculation, a period which in other animals would be considered exceedingly short. (6) *Can the disease be communicated by inoculating with the bitten part*, excised from another animal, and if so *at how long an interval from the bite?* Some light might, perhaps, be thrown on the question as to whether the poison does or does not remain at the seat of inoculation until shortly before symptoms appear.

NOTE ON RINGWORM: TRANSPLANTATION OF THE FUNGUS OF RINGWORM FROM CALF TO MAN.

By the Same.

It is well known that ringworm in the human subject is not infrequently caught from animals suffering under a similar disease. I cannot, therefore, claim, by the following experiment, to have added anything fresh to our knowledge of the disease in question; but since a single carefully performed and successful experiment is more valuable as proof than a great deal of inexact evidence, I thought it might be interesting to place on record a case in which the fungus of ringworm or Tinea tonsurans (*Trycophyton tonsurans*) was successfully transplanted from a calf to a man.

On October 16th, 1869, a patch of skin on the outer side of my left arm was slightly scratched with a pin so as to roughen the epidermis but not to draw blood. The lower ends of four or five hairs, from a patch of ringworm on a calf, and which had been ascertained by microscopical inspection to contain plenty of fungus, were laid on the roughened skin; there were one or two fragments of epidermic crust from the calf as well. The hairs and epidermic crust

were kept in contact with the arm by means of bandage, &c., until the 21st, when the dressing was removed and the same hairs carefully replaced and rebandaged to the arm. On the 24th, the whole was removed. Nothing more was noticed till November 11th (nineteen days after the infected hairs had been removed), except occasionally a little itching in the part; at the above date, I noticed at the seat of the experiment a small circular reddened and slightly raised patch of skin; it was slightly rough. When first noticed, it was a a little larger than a split pea.

On the 15th, it was nearly as large as a sixpence; its centre was at that date covered with dry half-separated scales of epidermis, its margins being red and slightly raised above the surrounding surface. The itching had increased. On the 21st, the circle was as large as a shilling. On examining some of the scurf with the microscope, I found the epidermis crowded with fungus, both mycelium and spores being present; the spores had invaded the roots of one or two hairs to a slight extent; I did not see any broken hairs.

On comparing the mycelium and spores from a case of ringworm in a calf with the fungus from the same disease in the human subject, I was unable to detect any material difference in size or structure between them, and one specimen might, as regards the fungus, have been easily mistaken for the other.

As regards the naked-eye characters of the ringworm patches, there seem to be no differences between the bovine and the human disease, excepting such as we should expect to find from the closeness of the hairs, and abundance of loose epidermis and fatty secretion on the skin of the calf as compared with that of the human scalp and body. The changes in the affected hairs are also precisely the same in the two cases; when invaded by the fungus they become brittle, and soon break up at a short distance from the surface, leaving jagged besom-like ends.

It may be of interest to note that out of a considerable number of calves examined for ringworm, the only ones affected were English; in no case did I find a Dutch calf showing any signs of the disease. This was noticed at the examination of several different batches of calves on different days. Perhaps the fact is well known to and can be easily explained by some reader of the *Veterinarian*.

[The transference of ringworm from the lower animals to man is by no means a rare occcurrence. In the Infirmary of the Royal Veterinary College a groom who has had the charge of a horse the subject of this disease has not unfre

quently contracted the malady, but it has rarely happened that its cure has proved intractable. The same phenomena have been observed again and again among herdsmen who had to attend to affected cattle. The circumstance noted by Mr. Nettleship of the disease being absent from Dutch calves most likely is to be explained by their being fat calves, as such only are now imported into England. Fat calves are as a rule free from ringworm, which, doubtless, depends to a considerable extent on their living on milk, and the general cleanliness which is observed towards them. Weaned calves, on the contrary, as might be expected from their being differently lodged and provided for, are highly susceptible to ringworm. The age of the animal should also be borne in mind when we endeavour to explain its seeming immunity from the disease. Fat calves rarely exceed twelve or fourteen weeks of age when slaughtered, and it is not until after this time that we see many cases of ringworm among animals in general.—Eds.].

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 444.)

The last alliance of the Thallogens which we have to examine will be the Lichenales, known as Lichens and Liverworts. These curiously illustrate the fact that scarcely an atom of the earth's crust, or indeed of the superficies of anything placed thereupon, but may become the nidi of some species of Lichen. Thus the variegated colours of rocks, stones, and buildings; the black, grey, yellow, and brown blotches on the boles of every tree; and the crustiform beards on the surface of the moor, on old palings, and fringing the branches of oak, apple, and other trees, are but so many forms of Lichens. Henfrey says, "The spores of Lichens are produced in the cavities of special parent-cells, which are called thecæ or sporangia. These are accompanied by a number of filiform cells (*paraphyses*) resembling those occurring with the sporangia of the Fuci, &c., and are collected together in groups of a definite form on the upper surface of the thallus, generally more or less immersed in its substance. The young thecæ contain a variable number of spores, usually eight to twelve, but seldom perfect more than one or two." ('Structural and Physiological Botany,' p. 115.)

This view induced Fries to form the opinion that Lichens "are types of Algals born in the air, interrupted in their development by the deficiency of water, and stimulated into forming a nucleus by light." The same author concludes that Lichens have the vegetation of Algals and the fruit of Fungales.

Agardh, according to Professor Lindley, "considers Lichens more nearly allied to Fungals than to Algals: he remarks that if Sphærias or Pezizas had a thallus, they would be Lichens; and that the same part is all that determines such genera as Calycium, Verrucaria, or Opegrapha to be Lichens and not Fungi. He adds that all the transitions from Algals to the state of Lichens which have been detected by modern enquirers, are mere degenerations into the form of the Lichen tribe, and by no means into Lichens themselves."

These opinions show how difficult it is in Nature to draw hard lines, and for the reason that she never made them; and indeed our own observations with the microscope would lead us to conclude that the cellular initiative matter one has examined on walls, may develope Algals, Fungals, and even higher forms of vegetable life, according to the presence or absence of moisture and light. But whatever theory may be held as regards the physiology of Lichens, we shall not be far wrong in at least viewing them on rocks and stones as the pioneers of higher kinds of vegetable productions.

As stated by Sir W. Hooker, "They are among the first plants which clothe the bare rocks, and form a humus for others of a higher organization to live and flourish in." ('English Flora,' vol. v, p. 130.)

The same idea has been noted by Professor Lindley. He says:

"Pulverulent Lichens are the first plants that clothe the bare rocks of newly-formed islands in the midst of the ocean; foliaceous Lichens follow these, and then Mosses and Liverworts." ('Vegetable Kingdom,' p. 47.)

These plants have been classified by Professor Lindley as follows:

Allianæ 3. Lichenales.

Nucleus breaking up into naked spores	*Graphidaceæ*, or *Letter-Lichens*.
Nucleus bearing asci; thallus homogeneous, gelatinous, or cartilaginous	*Collemaceæ*, or *Jelly Lichens*.
Nucleus bearing asci; thallus heterogeneous, pulverulent, or cellular	*Parmeliaceæ*, or *Leaf-Lichens*.

Lichens contain two sets of principles which make them useful to man; the one in a set of dyes, as Orchill, Orchall,

or Archill, derived from *Roccella tinctoria*, from which litmus is also made; in fact, any orchella weed will make litmus. The *R. tinctoria* and perhaps other species are sparingly met with in England, as at St. Malo, in the South, but the plant is imported for dyeing purposes from different parts of the world, and amongst others the following sorts are known in commerce:

Angola Orchella weed	Cape de Verde weed
Mauritius ditto	Western Island ditto
Madagascar ditto	Madeira ditto
Barbary ditto	Lima ditto
Cape of Good Hope ditto	Corsica ditto
Canary[1] ditto	Sardinia, &c., ditto

And in such quantities that, according to Pereira,

"In 1838, 567 cwts.; in 1839, 6494 cwts.; and in 1840, 4175 cwts. of Orchella weed paid duty."

Cudbear is another colouring matter made from Lichen. Pereira tells us that "the manufacture of this pigment was begun at Leith, about the year 1777, by the late Mr. Macintosh, of Glasgow, under the management of Dr. Cuthbert Gordon. From the latter gentleman's name the term *Cudbear* (at first *Cuthbert*) originated."

Cudbear is chiefly derived from the *Leconora tartarea*, an English species; but Berkeley tells us that Mr. Macintosh imports it largely from Norway, where it grows more abundantly than with us. He adds: "Yet in the Highland districts many an industrious peasant gets a living by scraping off this Lichen with an iron hoop, and sending it to the Glasgow market. When I was in the neighbourhood of Fort Augustus, some years ago, I was informed that a person could earn 14*s.* per week at this work, selling the material at 3*s.* 4*d.* the stone of 22 lbs."

Interesting as are the facts connected with the dye lichens, we must not dwell longer on this part of our subject, but hasten to make a few notes upon what we may perhaps be allowed to term the medicinal or dietetic forms. These are all *thalliform*, that is, consisting of a thallus, crust, or frond. These yield starch, gum, and sugar, and some bitter principles, which latter may make some of them tonic; but when removed by hot water, the plant may be boiled to a jelly,

[1] Mr. Lees says, "Many of the crustaceous and foliaceous lichens might be used in dyeing processes, but the *Roccella* or Orchell, brought from the Canary Islands, is most valued, and has been most employed. The price of this in the market is now about £290 per ton, and at particular times it has risen to nearly £1000!"—*Botanical Looker-Out*, 1851, p. 529.

which is used for coughs, and pulmonary complaints in general.

That Lichens contain a large quantity of gum, and thus may be made into jellies or patés which are demulcent and softening to the throat, is quite true, but at the same time it is highly probable that their uses in coughs were originally pointed out on the fanciful doctrine of signatures, some of the forms being supposed to have the appearance of a lung, *e.g.*, *Sticta pulmonaria*. Tree Lungwort was taken as Nature's indication of its uses; so the *Pulmonaria officinalis* (common Lungwort), a Boraginous flowering plant, was kept in our gardens for use in coughs, &c., on account of the spotted leaves reminding the observer of a section of a lung. But of all the species used in medicine, none has got so great a repute as the *Cetraria Islandica* (Iceland Moss), which, though an abundant plant on the Scotch mountains, is wholly imported for medicinal purposes from Norway and Iceland. Sir W. Hooker says of it, "Immense quantities are gathered in the latter country, not only for sale, but for their own use as an article of common food. The bitter and purgative quality being extracted by steeping in water, the Lichen is dried, reduced to a powder, and made into a cake, or boiled and eaten with milk, and eaten with thankfulness, too, by the poor natives, who confess that 'a bountiful Providence sends them bread out of the very stones.'"

This leads us to consider this class of plants as articles of diet, but before doing so we must refer to the *Peltidea canina* (the ash-coloured ground Liverwort), which was formerly sold at the physic-shops and herbalists as a preservative against the bites of mad dogs, and, as stated by Pereira, mixed with half its weight of black pepper, it formed the *pulvis antilyssus* of the London Pharmacopœia for 1721. This is said to have been formerly employed by Dr. Mead as a cure for the bite of a mad dog, whence its specific name; but as we have none of the worthy doctor's works to refer to, we are at a loss to determine the principle upon which he acted in using it.

The uses of Lichens as food for man and some of the inferior animals have been long known. The hunters in the arctic regions of America eat some species of *Gyrophora* under the name of *tripe de roche*. Franklin and his companions, as he states in his Narrative, in 1821 partook of four species of the genus when suffering great privations in America; and to its use their preservation is partly ascribed; but as the bitter principle was not removed, the party suffered from severe bowel complaints. Probably, too, the mere fact that

this Lichen, like the others, does not contain any muscle-making or flesh-forming matter, and they had no milk by which this might have been added, this must have been the real cause of the inconvenience, as no active medicinal principle has really been discovered in Lichens, and consequently though their feeding value is confessedly low, yet in so far as is known, every species is perfectly innocuous, or at least no poison has been found among them.

The *Cladonia rungiferina* (Rein-deer Moss) forms the principal winter food of the herds of rein-deer in Lapland; and lately it has become a moot question whether the Lapland Moss, Iceland Moss, and others of the family, might not be profitably employed as cattle food; and from some experiments with the latter in feeding calves—first steeped to remove the bitter extractive, and then boiled to a jelly in skim milk—we are disposed to recommend further trials. In the field one looks upon the abundance of lichens on the branches of trees as an evidence of damp. A hoary lichenoid orchard usually bears sweeter fruit, as, if the trees be attacked by Lichens, they are prematurely aged, and the fruit is smaller, though of sweeter quality.

Fruit-trees much covered with Lichens, is usually an evidence of want of drainage.

Now, although it is stated that Lichens are not parasitic, but merely epiphytic, it is not quite proven that they do not feed at least partially on some growing trees; at least one thing is certain, namely, that the trees on which they impinge in any quantity are never perfectly healthy.

Mr. Lees says that some of the hoary Lichens give such a spectral aspect to the branches they clothe, as if Nature had robed them with a permanent hoar frost. To some of these, more particularly, perhaps, *Evernia prunaster*, he says the name of "Death-moss" has been popularly applied, as denoting that the term of the tree's healthy endurance has arrived, when these pallid locks, assimilating to the grey hairs of man, appear.

Thus, then, Lichens have a botanical, commercial, agrarian, and even poetical aspect, either of which might render them interesting objects of study. Indeed, these "Time-stains," as Lichens have not inaptly been termed, are replete with interest in whatever aspect they are viewed.

A FEW REMARKS ON THE USE OF THE ACTUAL CAUTERY IN VETERINARY PRACTICE.

By W. A. Wilson, M.R.C.V.S.L., Liverpool.

It may, by some, be deemed unnecessary to discuss the subject of the use of the actual cautery, as a firing iron is one of the oldest instruments in use among veterinary surgeons, and every member of the profession knows all about its action, and is, or ought to be, able to apply it properly.

It is to be regretted, however, that this is not always the case; in some instances the operation has been "overdone," thereby causing sloughing of the parts, permanent blemish, and, consequently, discredit to the operator and also to the profession at large; for I maintain that when one member of our profession commits an error, especially in operative surgery, we all suffer, more or less, in the estimation of the owner of the animal.

Another reason why I have chosen the subject is because "firing" is, to a certain extent, (especially among the younger members of the profession) (like bleeding) becoming discontinued. Why is this? I presume it is because they think that by the application of milder and more scientific remedies, the diseases thus treated can be alleviated or cured. Such I admit, in many instances, is the case, but again, how frequently is the practitioner disappointed, after treating his patient for lameness under one or the other of the "mild and scientific" systems, to find at the end of a few weeks that the patient remains in "statu quo." We all know that if a horse, or any other animal, is intrusted to our care for the cure of lameness, or any other disease, and we do not effect that cure in a reasonable time, the owner becomes dissatisfied. We must all admit that there are many cases of lameness that are incurable; but I have frequently seen cases lightly treated and not cured, when, in my opinion, if the firing iron had been used, a different result would have been obtained.

Again, many object to the "practice of firing" on the plea of the extreme suffering caused by it, and perhaps some day we may have the Society for the Prevention of Cruelty to Animals interfering with us in this respect. We all know, at least I think so, that it causes more pain to the animal than any other operation to which we subject him, castration excluded. But of two evils let us choose the least: which, I ask, is the best? to allow the animal to suffer from lameness,

and thereby be rendered useless; or to submit him to the ordeal of the operation which I recommend, and thereby in all probability effect a cure. I would say to all those who protest against it because it is cruel, like Othello, "I that am cruel am yet merciful." Indeed there are many occasions where we are called upon to be "cruel in order to be kind." Some also object to firing on account of the marks or "scores" which it leaves behind. There is certainly good grounds for this objection, if the operation is slovenly or unskilfully performed, and consequently sloughing of the integument occurs, and a disagreeable looking bare surface remains. But I contend that the operation, if skilfully performed "secundem artem," does not leave any marks objectionable to the sight. Indeed many gentlemen in the hunting field have not the slightest objection to the marks left by the firing iron, and some even think them ornamental as well as useful.

It is said that "prevention is better than cure," and so it is, in the general acceptance of the term; but then, again, there is an old adage, "There never was a rule without an exception," and this will apply to the unnecessary, and consequently cruel, practice of firing young horses for imaginary or possible diseases. The owner or groom thinks there is a weakness or enlargement of some part or parts, which is frequently the seat of lameness, and to get rid of the supposed defect, puts the poor animal to the cruel (in this case) torture of firing. I have frequently observed this circumstance in reference to horses imported into this country from Ireland. Now, I have a decided objection to the operation thus employed, not only as regards the unnecessary pain inflicted on the animal, but also because, in nineteen cases out of twenty, the imaginary evils which present themselves to the eyes of the owner or groom are nothing more than the efforts of nature to enlarge or strengthen the growth of those parts, and if the animal had not been interfered with at the time, the operation would never have been performed, simply because it would at length have been discovered that there was no occasion for it. In talking of cruelty to animals, I beg to mention my idea of the intervention of the Society for the Prevention of Cruelty to Animals in suppressing the operation of cropping dogs' ears and cutting their tails. I think they are unnecessary operations, and I cordially agree with the Society, and will do all in my power to assist them in their endeavours to abolish such proceedings. In reference to the cruelty of the system, I think you will all agree with me that there can be but one opinion on the subject. The foregoing remarks will equally apply to the operation of docking the horse. I

have frequently refused to perform the above-named operations, not only on account of their extreme severity, but because they mar and deteriorate, in the majority of instances, the beauty, and consequently the value, of the animal. Nature has given us nothing superfluous; and I am happy to find that the custom of cropping ears and nicking tails has become entirely abolished.

In concluding these few brief remarks, and before I explain the method I adopt in firing, and consider its *supposed* effects on the animal economy, I may, perhaps, not be out of place to mention that I derived great pleasure in looking over the *Veterinarian* for the present month in observing that the Council of the Royal College of Veterinary Surgeons have not only introduced an educational examination of all gentlemen presenting themselves as pupils, but that next year it is proposed that all pupils should or shall undergo a practical examination previous to going up for the diploma of the College. This is as it should be. It is *imperative* that all gentlemen holding diplomas to practice as veterinary surgeons should be able, not only to perform all operations appertaining to the art, but to perform them well; I mean in a scientific manner, rapidly, and without nervousness, and hence to ensure the animal's freedom from prolonged pain.

Where is the pupil to learn this manipulation? I am afraid not at our Colleges, as the system of teaching is at present administered.

I therefore say that all pupils should serve an apprenticeship of not less than three years (if seven years so much the better for his future advancement), and, in the progress of time, I have no doubt but that such will be the established rule at all our colleges.—"'Tis a consummation devoutly to be wished."

Method of Firing.

The operation of firing consists in the application of a hot iron to the diseased parts.

We are all acquainted with the shape of the iron generally used, and, for all purposes, I am not aware that at present it can be improved upon.

The diseases that cause lameness, and for which I recommend firing are, spavin, curb, splint, ringbone, ossified cartilage, all bursal enlargements, commonly known as thorough-pin, bog spavin, wind-galls, &c., sprain or rupture of tendons or ligaments, lameness in the hip or stifle, quittor, navicular disease, and, in short, in all cases where it is considered advisable to employ extreme measures.

I have also found it of great service in other diseases, un-

connected with lameness, namely, in farcy, œdematous swelling of the leg of long standing, open joints, inflamed jugular vein, lampas, in many cases of hæmorrhage, and last, though not least, in the case of a bite from a dog, when there is reason to suppose that the animal was affected with rabies.

After I am perfectly convinced that I have correctly diagnosed the cause and seat of lameness, I direct the hair to be cut from the part to be operated on as short as possible. If it is a hind leg, I have a side line applied on the opposite leg; if a fore leg, I have the sound leg tied up "*à la* Rarey."

I never have my patient cast, only, at least, as a *dernier ressort*. Having the iron at a *white* heat, I score the parts, sometimes in a perpendicular and sometimes in a transverse direction, but generally the latter.

I draw the instrument pretty sharply over the part until there is left on the surface a mark of brown colour, which tells you that the part is sufficiently fired.

I find that by having the iron very hot, instead of at a dull red heat, as some writers have advocated, I can produce all the effect desired without the sloughing. I make the lines from half an inch to an inch apart, according to the breeding of the animal, the skin of the cart-horse requiring the lines wider apart and deeper.

I am not afraid of firing through the skin, because union of the parts will always take place.

I then blister the part with Ung. Canthar, tie the animal's head up to prevent him biting the part, if so inclined. At the end of two or three days, when the discharge has ceased, I apply lard or sweet oil, loose the head, and put the animal in a loose box, or turn him to grass, according to the wish of the owner; but I decidedly give the preference to the loose box, because in it the animal has more rest.

In cases of ringbone, ossified cartilage, quittor, farcy, thick leg, &c. I fire deeply, sometimes to the depth of an inch. I find light firing is of no use in those cases.

In hip-joint lameness I send the iron over head into the parts surrounding the joint, making four openings, namely, a superior, inferior, and two lateral, with the most beneficial results.

Having thus endeavoured to describe, as briefly as possible, my ideas on firing and the benefits derivable from it, I will now give my opinion of its action on the animal economy.

In all cases of lameness the presence of pain enables us generally to discover its seat and draw our conclusions accordingly as to its cause, &c.

Where there is pain there is generally inflammation, and an increased circulation, and consequent heat of the part.

I have been taught that it is a law of nature that two inflammations in contiguity cannot take place and be of the same strength.

I have as yet had no reason to doubt the correctness of the theory, consequently I believe that by using the actual cautery in cases of lameness, you cause a greater degree of irritation externally than that which is existing internally; in common parlance you draw it out, and with assistance of a few weeks' rest the lameness disappears, which is the object desired, and you get credit, and deservedly so, for having effected a cure.

But there is another effect derived from firing, which has been doubted by many practitioners, but which I do not doubt—I allude to the cicratrix which is caused by the operation, whereby the skin is tightened over the part, and acts as a permanent bandage. A bandage, if properly applied, imparts a certain amount of pressure to the part; that pressure not only gives support but assists the absorbents in taking up any superfluous deposit which may interfere with the natural action.

I have ventured to submit the foregoing observations with the sole aim that, in referring to a subject certainly not new in veterinary practice, it may be instrumental in provoking a discussion which may tend to elicit from the members of the profession further enlightenment, theoretical or practical, on the decreasing practice of firing.

After an experience of upwards of thirty years, wherein I have had numerous opportunities of performing this operation and have witnessed its satisfactory results, I feel justified in recommending its continuance instead of its disuse.

PROPOSED METROPOLITAN VETERINARY PATHOLOGICAL SOCIETY.

[We have received the following circular from Mr. Armatage.]

47, Eastlake Road,
Cold Harbour Lane, Camberwell, S.E.
6th Month, 25*th*, 1870.

Dear Sir,—A number of practitioners having signified their desire for the establishment in the metropolis of a Society under the above or other appropriate designation, for the purpose of promoting generally the advancement of veterinary science, it is proposed to hold a preliminary

Meeting of the profession in the Board Room of the Royal College of Veterinary Surgeons, 10, Red Lion Square, (kindly granted for the purpose by the President and Council), on Monday, July 11th, at 3 p.m., when the requisite executive will be appointed and other means taken with the view of carrying out the desired object.

I trust you will give your attendance and support on the day in question, and, in the meantime, prevail upon your friends in the profession to assist in the movement.

I am,

(Signed) George Armatage, M.R.C.V.S.
Hon. Sec. pro tem.

IMPACTMENT OF THE RECTUM OF A DOG WITH PIECES OF BONE AND A QUANTITY OF SAND.

By Arthur Taylor, Student, Royal Veterinary College.

Dear Sir,—On May 18th a gentleman called upon Mr. Batt of this town, whose practice I am managing during his unavoidable absence, to say he had a valuable Scotch terrier, a pet, which was suffering from constipation, and as he did not bring the dog I sent him Aloes ʒi, Hyd. Chlor. five grains.

On May 19th, the owner called to say the dog was no better, and his bowels had not been opened at all. I then recommended him to bring the animal to the infirmary, where he would be more carefully watched and attended to than at home. When I saw the dog, I diagnosed the case to be one of obstinate constipation, and administered warm water enemas, and also Ol. Ricini ʒvii with Syr. Rhamni ʒii. After the enema a slight watery evacuation took place with a very offensive odour. I then administered another enema to assist the action of the medicine, as it did not take any effect. I then gave instructions that the dog should be watched and went to see my other patients. I saw him at 10 p.m. the same day; the bowels had not responded. On paying him a visit the next day at 8.30 p.m., to my astonishment he was found dead. Although my prognosis from the first was not a favorable one, I did not expect so sudden a termination.

May 20th, 5 p.m., *post-mortem*.—Heart and lungs considerably inflamed. Patches of inflammation all through the intestines, and to my surprise I found in the rectum

with three or four small pieces of bone and a quantity of sand impacted.

It is difficult to account for the presence of the sand, as the dog was always kept in the parlour except when out for a walk with his owner.

My reason for recording this case is, that I have never seen a similar one, although to practitioners older than I am there may be nothing very unusual in the circumstance.

Newport, Monmouth.

Pathological Contributions.

CATTLE PLAGUE.

We have received much valuable information with reference to this disease during the past month, and regret being unable to give a more favorable account than appeared in our June number of its destructive effects in Eastern Europe. The malady has reappeared in some parts of Poland, from which it was hoped it had been effectually exterminated. Its increase in the Government of Lublin has called for increased precautions on the part of the Austrian authorities to prevent its entrance into the adjacent districts of Galicia. In other parts of Galicia it still continues, and also in Transylvania. Many Russian states are infected, but Hungary is believed to be at present free.

PLEURO-PNEUMONIA AND FOOT AND MOUTH DISEASE.

Both in Great Britain and in Ireland these diseases are still very prevalent, indeed, on the increase in many localities. Pleuro-pneumonia has as many as 140 centres of infection in Great Britain, being an increase of 16 during the month. The malady has assumed a very malignant character among dairy cows, and some cowkeepers are known to have cleared out their stock surreptitiously, with a view to save themselves from further loss. The tardy action of some of the local authorities in enforcing the requirements of the Contagious Diseases' (Animal) Act is much to be regretted; and, until more energy is displayed, we shall look in vain for any marked diminution, either in this or in the foot and mouth disease. The latter malady prevails in no less than 55 counties, and has 964 centres of infection.

MEASLES IN PIGS.

THE parasitic disease of pigs, vulgarly called "measles," is existing in several parts of the country, particularly in the neighbourhood of our large manufacturing towns. In some instances seizures of the infected meat have been made, and the parties exposing it for sale heavily fined. It is, however, to be feared that little check is given to the nefarious practice by these prosecutions, as care is taken to chop up "measled" pork into sausages as quickly as possible.

We learn that the Customs inspectors at Hull have seized two "measled pigs" at that port which had come in from Rotterdam, and sent them for boiling down to the grease works.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the number of foreign animals brought by sea to ports in Great Britain, which on inspection on landing, within the month of May, 1870, have been found to be affected with any contagious or infectious disease, specifying the disease, and the ports from which, and to which, such animals were brought, and the mode in which such animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Antwerp...	London ...	Foot-and-Mouth.	3	...	...	...	3	3
Cape Town	Southampton...	„	...	3	...	...	3	3
Copenhagen ...	Newcastle-upon-Tyne	„	8	...	...	...	8	8
Hamburg .	London ...	„	1	...	...	...	1	1
„ ...	Hull	„	...	...	...	5	5	5
	Total ...		12	3	...	5	20	20

"ALEXANDER WILLIAMS,
Secretary.

"Privy Council Office,
"Veterinary Department, 3rd June, 1870."

GLANDERS.—CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

The following circular has just been issued by the local authority of the metropolis:

The Metropolitan Board of Works being the local authority for the metropolis under the above Act, having regard to the Statute and to the Order of the Privy Council, requiring that every horse or animal having died or been slaughtered as in the Act mentioned, shall be dealt with as follows, viz., the carcase being disinfected, and removed in charge of an officer of the local authority to a horse slaughterer's or knacker's yard, licensed for the purpose by the Privy Council, and being there destroyed by exposure to a high temperature or by chemical agents; and also having regard to the Order dated the 15th March, 1870, do hereby give notice that horses or animals that have died of glanders or have been slaughtered, must be removed in charge of an officer of the said Board to one or other of the following horse slaughterer's whose premises have been duly licensed for that purpose, viz.—

Messrs. Harrison & Company, Maiden Lane, Belle Isle;
Mr. G. E. Stronach, Brandon Road, Belle Isle;
Mr. William Barber, Little North Street, Whitechapel;
Messrs. Whinkley & Shaw, No. 35, Green Street, Blackfriars Road;
Mr. Edward Wallis, Garratt Lane, Wandsworth.

And having regard to Section 10 of the Order of the 10th August, 1869, directing that every person having in his possession or under his charge an animal (including a horse) affected with a contagious or infectious disease, shall as far as practicable keep such animal separate from animals not so affected—and shall with all practicable speed give notice to a police constable of the fact of the animal being so affected.

The Metropolitan Board hereby caution all persons having glandered animals in their possession that unless they give the notice above directed, they will render themselves liable to a penalty of £20, and that all persons dealing with or disposing of any glandered animal otherwise than in conformity with the above-mentioned Act and Orders, will subject themselves to the penalties imposed thereby.

And the Board also warn all parties to give immediate notice of the outbreak of any disease, so that the requisite

steps may be taken to prevent its spreading, and that the carcases of such animals may be disposed of in accordance with the provisions of the Act and Orders in Council.

By order,

JOHN POLLARD,
Clerk of the Local Authority.

Metropolitan Board of Works,
Office: Spring Gardens,
May, 1870.

Facts and Observations.

COMPARATIVE NUMBER OF ANIMALS IN FRANCE BETWEEN THE YEARS 1852 AND 1862 INCLUSIVE.—The following table indicates the comparative number of animals in France between the years 1852 and 1862:—

	1852.	1862.
Horses	2,866,054	2,914,412
Asses and Mules . .	696,021	727,224
Cattle	10,093,737	10,956,273
Sheep	31,500,000	20,529,678
Pigs	5,246,403	6,037,548
Goats	1,337,240	1,726,398
Total . . .	51,739,445	51,890,533

It will be seen that the increase in *cattle* (bétall) during the period above mentioned has been but slow, for we find that in 1862 there was very nearly the same number as in 1852; the number of horned cattle and swine has been gaining little ground, but that of the sheep has diminished. The consumption of meat has undoubtedly greatly increased, and in order to prevent an undue rise in price it will be necessary to take measures which are not surrounded by great difficulties for supplying farms with increased supplies of cattle.

In order to attain this end, it would suffice to push the production of forage, and to dig a greater number of canals of irrigation; water and manure are, without contradiction, the two most powerful agents concerned in the production of forage. It is truly lamentable that we make such slow progress; as live stock are the measure of the agricultural riches of a country.—*Receuil M. Médecine Vétérinaire.*

Chemical Composition of Sows' Milk.—The milk of most species of domesticated animals has been often analysed, but the composition of the milk of the sow was not known until Professor Cameron undertook the investigation. The sow whose milk was examined had farrowed six days previously; she had a fine litter of pigs, and was in good condition. Her food was sufficient, without being too abundant, and consisted of small potatoes sliced, pulped roots, and a small quantity of grain.

The following method of analysis was adopted:—A certain quantity of milk was weighed, acidulated with acetic acid, and afterwards diluted with pure quartz finely pulverised; it was then evaporated to dryness over a water-bath. The residue obtained was treated with ether, which, on evaporation, deposited the fatty constituents of the milk. Their weight having been determined they were submitted to calcination in a platinum capsule.

This operation did not leave any residue, showing that they did not contain any mineral matter or casein. The amount of nitrogen was determined in the residue deprived of fatty matters, and by aid of the figures obtained the proportion of casein and other azotised constituents was calculated. The lactin was determined by difference and by means of the cupro-potassic solution.

The milk thus analysed was without any blue tint, very sapid, and had a slightly alkaline reaction. Its specific gravity was 1·041. 100 parts of it contained—

Water	81·80
Fat	6·00
Caseine and other Nitrogene bodies .	5·30
Lactin	6·07
Mineral matter	0·83
	100·00

The following Table gives the result of the Analysis of several kinds of Milk.

	Water.	Fat.	Caseine.	Ingan.	Mineral matter.
Human Subject .	889·08	26·66	39·30	48·68	1·30
Cow . . .	864·20	31·30	48·40	47·70	6·00
Goat . . .	844·90	56·87	35·14	36·91	6·18
Ewe . . .	832·32	51·31	69·78	39·43	7·16
Mare . . .	904·30	55·76	38·35	32·76	5·23
Ass	890·12	28·53	35·65	50·46	5·24
Sow . . .	818·00	60·00	53·00	60·70	8·30

Relation between Water and Solid Matter in different kinds of Milk.

	Water.	Solid matter.
Human Subject . . .	889·08	110·92
Cow	864·20	135·80
Goat	844·90	155·10
Ewe	832·32	167·66
Mare	904·30	95·70
Ass	890·12	109·88
Sow	818·00	182·00

These tables, which enable one to readily draw a comparison between different kinds of milk, show that sow's milk contains nearly 50 per cent. more nutritive matter than that of the cow, and it is therefore probable that sows' milk may be especially useful in those maladies in which milk is prescribed.—*Med. Press and Circular, May*, 1869.

Bromide of Potassium.—Dr. Namias, of Venice, has discovered that after the administration of bromide of potassium as a medicine, it can be detected in the brain, the lungs, and the liver, as well as in the blood.—*Journal of the Society of Arts, May* 20, 1870.

Preserved Meat.—During a lecture on the preservation of food, at Dresden, Dr. Stein produced a tin canister, of good size, containing butcher's meat, which had been preserved by Appert's method nineteen years ago. When the canister was opened, the meat was found to be as fresh and full of flavour as when it was first placed in the tin canister.—*Chemical News.*

Picric Acid and Ozone.—If picric acid be projected into a jar of ozone, it is found that an instantaneous explosion takes place. This may lead to new applications of ozone as an explosive agent for powders prepared for the purpose, although the whole question of the existence and properties of ozone is still very obscure.—*Journal of the Society of Arts.*

Ozone.—A method has been exhibited by Mr. Loew, at a meeting of the Lyceum of Natural History in New York, by which he claims to be able to obtain ozone in any quantity. He assumed that, during a certain stage of combustion of gas, ozone was generated, which was afterwards destroyed in the upper part of the flame. By tapping the cone of light at the right point ozone can be drawn off. This was done by blowing through the flame of a Bunsen burner, and collecting the product in a long glass jar. There

was sufficient gas collected in the jar to prove, by its odour and the usual tests, that ozone was present.—*Ibid.*

The Architecture of the Human Body.—Professor Humphrey, in his fourth lecture on this subject at the Royal Institution, said that as the tail diminishes in animals the hinder limbs seem to grow out. Thus, the serpent is nearly all tail and no limbs: the whale, with its shortened trunk, has a broad flat tail; also, as the tail of the tadpole disappears, the hind legs of the frog take its place. Man has the bones of a small incipient tail, with three flat sides; this tail turns inwards, so that the human being is really the only animal in creation who can occupy an arm-chair in comfort. The head of the thigh-joint rests in a socket so very shallow that it is only held in its place by atmospheric pressure and the ligaments surrounding the joint; and the leg swings to and fro below this shallow socket very much like a pendulum.—*Ibid.*

Tobacco Culture in Bavaria.—Bavaria produces about one fifth of the entire quantity of tobacco grown within the limits of the German Customs Union Territory, as will be seen by the return of the tobacco produced in each of the different states in 1866:

Baden	243,740	cwt.
Prussia, including the newly annexed States	222,324	„
Bavaria	135,659	„
Hesse Darmstadt	36,403	„
Wurtemberg	6,760	„
Saxony and Thuringian Duchies	18,533	„
Total	663,419	cwt.

—*Ibid.*

There is a project on foot in Paris for the formation of a museum containing the best examples that can be found of the various types of the human race, not for scientific purposes only, but also in the interest of art. M. Charles Rochet has introduced the subject in a lecture at the Sorbonne.—*Standard.*

Leptothrix and Vibrio Bacillus.—MM. Giuseppe Balsamo Crivelli and Leopold Maggi have an important paper in the 'Rendiconti del Reale Istituto Lombardo' (ser. ii, vol. i, p. 11) on the above organisms. They affirm that the leptothrix, the vibrio mentioned above, and several others,

are developments from granules of the vitelline membrane of an egg, or from epithelial cells of the tongue, and that for their appearance no spores are required, nor germs floating in the air, but only the transformation of a morphological element.—*Monthly Microscopical Journal.*

The Growth of Organisms in contact with Phenic Acid.—The preceding authors detail several instances of vibrions and bacteria appearing in animal solutions containing phenic acid; but they state that the acid kills them when their organization is complete.—*Ibid.*

The Mechanism of Suppuration.—Experiments of M. Hayen, brought before the French Academy of Medicine by M. Vulpian, overturn the theories of Virchow and Robin, by showing that the globules of pus are not formed at the expense of the connective tissue or of the blastema, but they come from the blood, and constitute its leucocytes. M. Hayen's experiments were made with frogs, but M. Vulpian and after him MM. Volkmann and Stradener have shown that in erysipelas a considerable extravasation of the white globules occurs, which is easily proved by cutting the skin. A Dutch physiologist, M. Costa, has demonstrated this extravasation of white globules in inflamed spots.—*Cosmos.*

Testing of Alcohol and Spirits for Amylic Alcohol.—The internal use of amylic alcohol, even in small quantities, being very deleterious, it is important that its presence in spirits and alcohol should be rapidly tested. This is done by pouring the suspected alcohol into a burette, mixed with its own bulk of rectified and pure ether and also its own bulk of water, when, after the mixture is gently shaken, the ether will become separated from the rest of the fluid and float to the top, containing in solution the whole of the amylic alcohol present in the burette. The ether is removed by a pipette, and, on being left to evaporate spontaneously, will leave behind the amylic alcohol, readily detected by its offensive smell.—*Journal of the Society of Arts*, April 15.

Phosphate of Lime.—The New York journals announce that, in the neighbourhood of Charleston (United States), a short time ago, a considerable deposit of phosphate of lime was discovered, stretching over an area of about seven hundred acres. The beds of this phosphate are from forty to sixty centimètres in thickness, and it is calculated that the entire deposit has a value of above 6,000,000 dollars. This phos-

phate, which is more fertilising than Peruvian guano, can be sold at Charleston for six dollars a ton; and for facilitating its sale, the proprietors have resolved to excavate a canal two miles in length, fifty feet wide, and three deep; which, starting from the deposit of phosphate, falls into the river Arkely, which passes the town of Charleston.—*Ibid.*

Deposit of Sulphur.—Several of these deposits have been discovered in California, where, in one establishment, some ten tons are now refined daily. The most recent report is from the Suez Canal, where, on the shores of the Red Sea, at the entrance of the Gulf of Suez, two inexhaustible deposits have been found. One at Djemsah, is situated in a perfectly rainless desert on the African coast, very near the sea, and consists of a hill 600 feet high, composed entirely of sulphur. In order to obtain the sulphur, it is blasted like the rock in a common stone quarry. Two hundred Arab labourers are occupied, under the supervision of French engineers, and produce some ten tons of sulphur a day. A railway is in course of construction, for the purpose of transporting the sulphur rapidly and in large quantities to the furnaces in which it is refined, and thence to the coast to be shipped. The Viceroy of Egypt buys from the French company all the sulphur at eighteen dollars per ton. The other locality is Ranga, 500 miles from Suez, and also near the coast of the African continent. In this case also the sulphur appears in the form of rocks, much purer than the former, of a bright lemon-yellow colour, but covered under the earth, so that it must be obtained by tunneling. This sulphur mine has not yet been worked to any extent.—*Ibid.*

Rock Salt in Prussia.—In Sperenberg, near Berlin, borings for rock salt have been carried on for the last two years. In February a depth of 2725 ft. had been reached, and the thickness of the salt bed explored to 2439 ft.—*Ibid.*, April 22nd.

Test for Arsenic.—Bettendorf has discovered a test so delicate that it is said to be capable of detecting one part of arsenic in a million parts of solution, nor does the presence of antimony affect it. The arsenious liquid is mixed with hydrochloric acid until fumes appear; chloride of tin is then added, which produces a basic precipitate, containing the greater part of the arsenic as metal, mixed with oxide of tin. —*Ibid.*

THE VETERINARIAN, JULY 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

MORBID ANATOMY IN ITS RELATION TO VETERINARY JURISPRUDENCE.

IN our courts of law, all over the country, veterinary surgeons are constantly put in the witness box to give evidence respecting the duration of a disease, the existence of which is admitted, but the date of origin of which is in dispute. If ever it should happen that a painstaking compiler in the future collect all the records of trials in which the question of the presence of a certain disease at a particular period has been the subject of inquiry, say for the last thirty or forty years, the volume will form an interesting, perhaps an amusing, certainly not a satisfactory commentary upon the value of professional evidence.

The public will not judge the members of one profession harshly on account of difference of opinion, because it very contentedly accords the right of difference to men of all professions, doctors in particular, and is always rather disposed to smile at scientific disputes than to grieve about them; but among ourselves this contented indifference can only be indulged at the expense of the advancement of our science.

By common consent any one may have an opinion upon any subject, as an opinion is no more than an impression, of the correctness of which there is no proof; but it is a matter of great importance to distinguish between opinions which are the result of a deliberate weighing of evidence, and those which are formed spontaneously by an inexplicable mental process which mainly consists in elaborating ideas out of nothing. When an accomplished pathologist makes a careful post-mortem examination of an animal that died of disease affecting the lungs or heart, submits the morbid structures to rigid scrutiny, using all the aids which chemistry and the microscope are capable of affording, and after becoming acquainted with the details of the changes which have

occurred, arrives at the conclusion that the disease which produced such alterations must have existed for a week prior to the animal's death, he only enunciates an opinion: the pretender who contents himself with a glance at the parts, and states his conviction that the disease must have existed for at least three months does the same thing, he gives his opinion; but in the one case the evidence is that of a philosophic inquirer, and is valuable accordingly, while in the other it is the meaningless utterance of an ignoramus; and if the matter in dispute is susceptible of proof, and it transpires that the philosopher was right, no one is surprised.

Opinions quite as widely discrepant, however, are constantly given by men in our profession of equal professional qualification and experience, and it is this circumstance which is so deplorable and so unnecessary, because, admitting that every man has a right to enjoy an opinion, no one is bound to utter an opinion until he has taken every means to insure that it shall be in all particulars worthy of being uttered and defended. Many products of disease are presented to the notice of the morbid anatomist, characterised by no definite indications of age, and in respect of their duration he would often find it impossible to form any opinion. In this category, for example, may be placed fibrous and fatty tumours, bony deposits, calcareous degeneration of textures, all which morbid conditions, when fully developed, remain for long periods quite unchanged in character, and afford to the most careful investigator no evidence of the passage of time.

Other phenomena of an active kind are less persistent, such as suppuration, plastic exudation, serous effusion, all of which depend, in their origin and duration, upon a combination of conditions, and can only be correctly appreciated in the light of the knowledge of all the circumstances,—upon all these points, and upon many others more obscure, what are by courtesy termed "opinions" are frequently volunteered by men who, if fairly put to the test, are quite incapable of determining the character of the most common morbid products, and whose great error is the weak adherence to the belief that to all questions some kind of answer, right or wrong, must be given. If we all of us were content to

deal with facts as they present themselves to us, and would avoid the temptation to express our crude imaginings, the records of veterinary jurisprudence would testify to our scientific consistency instead of condemning us for persistent contrariety.

By way of illustrating our argument, we venture to adduce the results of our experience now spread over some years. In all cases of doubt and difficulty we have seen men of scientific attainments and philosophical mind hesitate, and even fail to arrive at any definite conclusion; but in the whole course of our observation we never remember to have seen the empiric at fault, and we have often realised the stern remark of the wise man about "the fool who is wiser in his own conceit than seven men who can render a reason."

Extracts from British and Foreign Journals.

THE PRODUCTION OF CHEESE.

The production of cheese is becoming an important branch of our agricultural industry, and the demand both for home consumption and for export is every year increasing. Factory-made cheese will compare favorably with the best of English and Dutch manufacture. The business of making cheese in the United States has long been profitable to the farmer and dairyman; and that it will continue to be so for years to come seems highly probable, in view of the limited crop and the growing taste of our people for food of this description. It is estimated that there are in the United States and Canada 1000 factories, whose average weekly production is equal to 117,250 boxes. The cheese made in the United States and Canada in 1867 reached 215,000,000, and in Great Britain 179,000,000 lb. The consumption in America during the same period amouted to 160,000,000 lb., and in Great Britain to 400,000,000 lb., leaving a deficiency over the joint production of the two countries of 75,000,000 lb. This deficiency was supplied by Holland and Belgium. The principal States engaged in the manufacture of cheese in this country are New York, Vermont, Massachusetts, Pennsylvania, Illinois, Ohio, Michigan, and Wisconsin. Western New York, the Western Reserve, and some sections of Illinois and Michigan, enjoy a deservedly high reputation for the excellent qualities of the products of their dairies. England

has long been justly celebrated for the abundance and superior quality of its cheese. Cheshire, Stilton, Derbyshire, Suffolk, and Cheddar, are the best known varieties. Gouda cheese, the best made in Holland, is very pungent, which preserves it from mites, and this pungency is attributed to the fact that muriatic acid is used in curdling the milk, instead of rennet. Parmesan cheese, made at Parma, in Italy, owes its rich flavour to the fine sweet herbage of the meadow along the Po, where the cows are pastured. The best Parmesan cheese is kept several years, and none is sold until it is at least six months old. Swiss cheese is made, in part, of skim-milk, and is flavoured with fragrant herbs. They usually weigh from 40 to 60 lb. each, and are exported in casks, each of which contains ten cheeses. Westphalia cheese derives its flavour from the curd being allowed to become soured before it is compressed. Dutch and Swiss cheese contain, according to chemical investigation, from 26 to 40 per cent. of nitrogenized matter, considered the most nutritive constituent of food. The best cheese is from 25 to 100 per cent. more nutritious than bread and meat, which contains only about 22 per cent. of nitrogen. The superior qualities of cheese have been repeatedly proved by the experience of labourers in those countries where it forms one of the principal articles of food. To delicate stomachs cheese is objectionable, on account of its slow and difficult digestion; but to individuals of great physical strength it is a healthy and agreeable article of consumption. In combustible or heating qualities, cheese is only exceeded by oil, butter, and like unctuous substances.—*New York Mercantile Journal.*

SPANISH OR TEXAN FEVER.

Spanish fever, or Texas fever, as different authorities have it, appears from all accounts to be a formidable disease, of which we have yet happily no practical knowledge, and from the ravages of which we have hitherto felt ourselves tolerably secure. The honorary corresponding secretary of the New York State Agricultural Society, however, has expressed his conviction that cattle on the Pampas are likely to be affected with Texas cattle fever, and as South American cattle have been landed in England recently, and more may be on the way, stock owners in this country are not likely to receive the suggestion with indifference. With every desire to raise a warning note in time, we cannot help feeling that we are left very much in the dark as to the extent of the risk

incurred. All that has been written or said about Texas fever confirms the belief that the disease is confined to certain districts on the shores of the Gulf of Mexico. Upon this point reporters who contradict each other flatly on every essential particular of the nature of the plague, are in accord, but Mr. Harrison's letter to Dr. Cameron, as quoted by the 'Chambers of Agricultural Journal,' cuts at the root of this consolatory assurance, and sets us drifting in a sea of speculation.

The author of the suspicion which we are now trying to discuss says, he shall be very much surprised if cattle from the Pampas are not subject to the same diseases as the Texas cattle; but really it seems to be more a matter for surprise that they should be so affected and nothing be known of the matter. This difficulty, it is true, may be got rid of at once if we accept the statements of those who say that Texas cattle do not themselves suffer from the disease, which they communicate to other cattle with such effect that 90 per cent. of the affected beasts die; such a condition of things is indeed alarming and, worse still, mysterious. Once let the idea be accepted, that animals to all appearance in good health carry about the germs of a deadly disease, capable of ready communication, and of so malignant a kind that even the ground over which these animals tread becomes contaminated, and there is an end of all sense of security for the owners of home-bred stock, so long as cattle from distant regions are imported into this country. No amount of care in inspection, no length of quarantine will avail to protect our herds and flocks from animals which are the miserable but unconscious carriers of an infectious but permanently occult disease.

Medical authorities who have written upon the Texas fever do not hold the opinion that Texas cattle are exempt from the malady which they impart to others, although they admit that they are less virulently attacked, and also that they less readily succumb to the effects of the disease, which is almost invariably fatal to cattle that are brought within the sphere of the infection.

If it is true that Texas fever is, like other diseases, indicated by certain signs, and produces certain effects in the organs of those animals in which it is developed, it would be possible to obtain some information of its existence on the Pampas, and then the remedy would be obvious; but if the previous assumption be the correct one, and the affection cannot be known to exist, because it is not manifested at its origin by any appreciable signs, we are warring against a

shadow. What can be done? Prohibit the importation of cattle from South America? On what ground? The mere suspicion of a disease, which may exist, but of the presence of which there is no evidence to be obtained without exposing home-bred stock to contact with the suspected beasts; or by the doubtful method of examining the interior of the body for traces of an affection, of the precise nature of which we know absolutely nothing definite.

Whichever view of the character of the Texas cattle fever be accepted, it seems we are only in the position to choose one horn of a dilemma. If cattle on the Pampas are subject to an infectious disease, the importation ought to be stopped; but if the disease in question is not indicated by any special symptoms, how is the proof of its existence to be obtained?

Perhaps after all there is not much reason for apprehension; the last lot of South American cattle, if we recollect rightly, realised a sum that would scarcely cover the original cost and expense of transit, and although we should be sorry to hint at a limit to the enterprise of cattle importers, it is tolerably safe to affirm that cattle will not be imported from the Pampas unless they can be sold here at a fair profit; and ships had better return empty than bring an unremunerative cargo. On the contrary, should the South American trade grow in extent, and Pampas cattle become as familiar to us as German, Dutch, French, and Spanish are now, we must be content to incur whatever may be the risk, until it assume a tangible form; and should it ultimately transpire that cattle from South America endure the hardship of a long voyage, and show no sign of disease on being landed in England, and, notwithstanding, subsequently communicate a malignant and contagious disease to home cattle, our veterinary authorities will all need to go to school again to learn the why and the wherefore.—*Agricultural Gazette.*

"TURNING OUT HORSES TO GRASS.

"To the Editor of the Times.

"Sir,—Mr. Cartledge has addressed a very sensible letter to you on the above subject, which has been answered by Mr. Bullock Webster, who seems to take a different view of the matter. Permit me to say that I think they have both generalised too much, and that the best practice lies between them. Mr. Cartledge argues rather against the abuse than the use of the system, and though Mr. Bullock Webster, 'not being a rich man, may have found it conve-

nient to summer his hunters at grass,' I much doubt whether his plan is well suited for restoring the legs and feet of valuable horses that have been much battered about to their primitive soundness.

"The fact is that when horses have suffered in their work from anything of the nature of strain of the sinews or their ligaments, or when the legs are very much the worse for wear, they should be allowed no exercise but such as they can get in a loose box; they should be treated as a man would be who has sprained his ankle and must be confined to his sofa. On the other hand, I have seen horses who were pretty good on their legs, but stale, groggy, and tucked up from hard work and dry and exciting food, improve as if by magic when turned out to grass on the following plan. I have housed them during the day time in a well-ventilated building, darkened so as to exclude the sun and flies, giving them about half a peck of corn daily, with bran and clover chaff; they have thus been turned out at night in a pasture in which there was an abundance of grass. Under these circumstances they are never tormented by flies: when they are out all is cool and quiet, the long grass saturated with dew supplies an admirable, cool, refrigerating poultice to their legs and feet, and the grass they get, combined with their daily feed of corn, seems to plump up their bodies without much interfering with their condition for work. I have taken up horses treated in this way as late as September, and had them in a very fair order for work by the commencement of the hunting season. I am aware that this system will not suit all horses; small-barrelled washy horses are too much purged by green food; they are also, in general, restless and irritable, galloping about and tearing their companions, and so are better at home. It may be said against this plan that it gives more trouble than keeping the horse altogether in the stable, and is not economical. This may possibly be the case, but with valuable horses we must not grudge a little trouble; and I believe, in the long run, it will prove more economical than leaving the animals out in the field all day exposed to the heat of the sun and the attacks of the incessantly persecuting flies.

"I cannot sufficiently praise what Mr. Cartledge said some time ago respecting the allowing horses a more liberal supply of water than is done by many horsekeepers; in fact, the supply should be unrestricted, and where it can be possibly managed it should be always placed before them. The mastication and digestion of such dry provender as hay and corn are cannot be properly carried on without occasional sips of

liquid to wash them down. Let a man try to make a hearty meal on oatmeal-cake or biscuit without any drink, and he will soon find himself nearly choked.

"I am, Sir, your obedient servant,

Times, May 31. "C. C. S."

PITHING.

The question of how to inflict the swiftest and least painful death upon animals which are required for food has often been debated, but without the establishment of the requisite unanimity of opinion which must precede the adoption of a universal method of slaughter. At the last meeting of the Smithfield Club a letter was read from the President offering a prize for the best instrument for slaughtering animals by dividing the *spinal vertebræ*, by which we presume is meant the spinal cord—the process, in fact, of "pithing." There is no doubt that the suggestion is well intended; but we distinctly state our belief that the idea of pithing an animal doomed to slaughter is anything but a humane one. Some harrowing discussions have been carried on lately in the daily press respecting the probable amount of consciousness which is possessed by a head after its sudden removal from the body by means of the guillotine; but, whatever may be the objections on this ground to swift decapitation as a mode of destroying life, they are multiplied indefinitely against the process of pithing, or dividing the spinal cord, which is a very incomplete form of decapitation, leaving the sensorium uninjured. To use a common expression, the head is left alive while the whole of the body below the point of division becomes an inert mass, although the heart continues to contract for some time, and the brain is supplied with its natural amount of blood. In fact, the animal loses sensation in all parts below the head, leaving the brain intact, and fully capable of carrying on its functions as long as it is supplied with blood. In decapitation, on the other hand, the brain is not only deprived of the usual supply, but is at once drained of the amount of vital fluid normally contained in its vessels, the immediate effect of which is syncope, with its attendant complete and universal loss of sensation. In many respects the present modes of slaughtering all sorts of animals are unnecessarily painful; but the plan of pithing, however skilfully done, and however ingeniously constructed the instruments may be for the purpose, is not an improvement upon any of the methods at present in use.—*The Field.*

DAIRY FARMING.

By the Northern Farmer.

(*Continued from p.* 564.)

The Dairy.—A dairy is popularly supposed to be a structure combining neatness with elegance, while at the same time it affords every possible convenience for the preservation of milk and cream until manufactured into butter. Beautiful dairies are certainly not scarce, but they are mostly in connection with the establishments of wealthy families, who take a special pride in having the dairy a model of cleanliness and good order, and fitted up with every contrivance that will save labour, and enable the dairy-maid to have everything connected with her department in first-class condition, fit at all times for inspection, besides supplying cream and butter for the family of the very best quality. The ordinary farmer, however, is very differently situated in this respect, his dairy being too frequently a mere make-shift, in no way adapted to the purpose for which it is used: circumscribed in its limits, with low roof, damp floor, and incomplete ventilation, it is almost impossible to preserve that thorough state of cleanliness so indispensable for the production of high class butter. It is clear that an improperly constructed dairy must be most inimical to the farmer's interests, being the fruitful cause of much butter of indifferent quality, the lower price at which it must be sold taking a goodly slice off the annual receipts. For the convenience of those concerned in its management, and for the sake of having the milk removed to the vessels in which it is to be set with as little agitation as possible, and before being too much cooled, it is obvious that the milk-house should be situated conveniently to both the dwelling-house and milking-stalls. At the same time it should be completely removed from the manure-heap; or if it must unavoidably be in the range of buildings which surround the cattle-yards, there should be no communication on that side, isolation so as to secure freedom from the gases evolved by the fermentation of manure being imperative. A north or north-west aspect is very suitable, and if at all practicable the ground should slope away from the dairy with so much of a fall as to render it an impossibility to have such a thing as stagnant water in its neighbourhood. It is not necessary that the erection for this purpose should be large, as space can be economised by having a double tier of shelves; therefore a somewhat long and narrow house is preferable to one which is nearly square, centre space, especially where there is a churning-room attached, not being so much an

object. The floor should be laid with tiles in preference to flags, as having been submitted to the action of fire they tend to preserve that dryness of atmosphere so essential to success; while flags, however suitable they may be in other respects, attract damp, invariably sweating on the approach of rain, and continuing moist and clammy during the prevalence of wet weather. A thorough draught should be obtained, if possible, so as to keep the air pure and fresh, the taint imparted by confined air being fatal to sweetness in the products of the dairy. Openings at opposite sides ensure this when the situation permits. When, however, these are only admissible on one side, ventilators must be placed on the ridge of the roof. Instead of these openings being glazed, perforated zinc should be neatly fitted, which, admitting air and light abundantly, excludes dust, flies, and all objectionable matters which may be floating about. Wooden shutters will be found useful during high winds, and for the exclusion of frost. A hot-water pipe carried round the house is of the greatest service in winter, enabling the temperature to be regulated, so as to get the cream to rise quickly and in full quantity, extreme cold being very prejudicial to its separation from the milk. In connection with, and having a door opening into the dairy, there should be a small room for churning and washing the butter and preparing it for sale. This is a most useful addition, and should not be done without if possible, as, if the operations which should be conducted here are performed in the dairy proper, it becomes almost impossible to preserve the purity and sweetness of air so essentially requisite. The floor of this room should be so constructed as to carry off the water without stagnation, the channel which conveys it going through the wall, and then communicating with a drain. On no account should the latter open into the house by being carried underneath the wall, as, however carefully managed, foul gases will be driven back, and the air inside become vitiated in consequence. The scalding-house should have no connection whatever with the dairy or churning-room, but should invariably be entered by a separate door.

Utensils of the Dairy.—There is very great diversity of opinion with regard to the best material for the coolers or vessels which contain the milk while it remains in the dairy, china, glass, wood, earthenware, zinc, and tinned iron having all supporters, and all having something to recommend them, either on the score of economy or usefulness. China bowls being the most ornamental, are found on the shelves of those dairies which we have already had occasion to notice; but are

never seen in the possession of ordinary farmers. Glass is an excellent material for a milk-pan, and would appear from experiments which have been made to have a certain advantage over other materials, in conducing to the rising of the cream. Notwithstanding this, they do not seem to have come into such general use as might have been anticipated, probably on account of the first cost being considerable, and from a natural fear of their being easily broken; which we believe, however, is not really the case. The brown ware pan recommends itself by reason of its cheapness, and is a favorite; it is easily cleaned, and if a few breakages do occur in the season, the expense of replacing them is but trifling. Wooden coolers are also largely used, and are, probably on account of their lasting nature, the most economical of all milk vessels. When kept as they ought to be they are highly ornamental; the hoops bright as silver, and the oak scoured white as snow, affording a pleasing contrast. They have also the great advantage of preserving the natural warmth of the milk much longer in a low temperature, a quality which adds to their merit in no small degree. When temporarily out of use a little water may be placed in them, so that the hoops will not loosen, which they are apt to do in very hard dry weather. Attention to this little matter will render a well-made oak cooler almost imperishable. Shallow rather than deep vessels are the most suitable, the cream rising more quickly. This formation is exactly found in the wooden cooler as usually made; and vessels of other material which are made in the same form are best adapted for the dairy. The churn has of late years come as near perfection as it seems possible to bring it; and certainly in the hands of those accustomed to its use, the forming of the butter can be regulated to a minute, the quality of the article being superb when good sweet cream is used. It is of no advantage to bring the butter quickly, as by doing so the quantity is less and the quality inferior. To have substantial butter, firm in texture, rich in colour, and of good keeping quality, and moreover so as to extract all the butter which the cream contains, the process of churning should occupy not less than half an hour: and will frequently run on to the full hour if the temperature is rather under the mark, which is as nearly as possible 60 degrees. For ease of working and simplicity of action there is no form to equal the barrel churn, as sent out by the best English makers; and it seems by general acceptance to be the universal favorite. About 80 lbs. can be easily churned by manual labour when the axle of the churn is mounted on a single little roller to ease the friction; and in

practice there is not the slightest difficulty in getting the butter out of this style of churn, nor is there the slightest inconvenience experienced in cleaning it.

Management of the Cream and Butter.—Much bad butter is made by permitting the cream to stand too long before being skimmed, putrefaction having commenced, the taint of which no after manipulation can wholly remove. This is done too frequently from the mistaken notion that if skimmed too soon the whole of the cream will not have time to rise, and butter of indifferent quality is habitually made, the parties doing so arguing that what is lost in quality is gained in quantity—a species of self-deception which results in much loss. To assist the churning process, there is no objection to the cream being soured; and the butter is in no way injured thereby, perfectly sweet cream being seldom used during summer unless for a very particular purpose. During the summer months there is some difficulty in having the temperature sufficiently low, and in consequence cold water must be brought into requisition very abundantly to reduce the cream to the proper standard. Filling the churn with cold spring-water over night, and plunging the cream crocks into large tubs of the same, saves all trouble, the butter having the firmness and consistency of that made in the autumn. So effectual is this mode of management that even where ice can be cheaply and conveniently obtained, it need seldom be used. In situations where cold spring water has to be brought a considerable distance, and is consequently very valuable, a few pounds of ice is exceedingly useful on churning days, saving a great deal of trouble, besides enabling the dairy maid to produce a first class article. The butter on being removed from the churn should be washed in the iced water until the whole of the butter-milk is expressed, which is easily known by the water running off at last clear and pure.

If the milk has been properly strained when brought in from the cow (an operation which ought on no account to be omitted) there will be no hairs or other impurities in the butter; and it is now ready for being salted. One imperial pint of salt to about twelve pounds of butter is quite enough to preserve it for any length of time that may be required; if for immediate use, half the quantity will be sufficient.

It is not at all impossible but that butter which, when taken from the churn was of superior quality, may, from imperfect salting and packing, be inferior by the time it is offered for sale. Much care should, therefore, be taken in

intimately blending the salt with the butter, so that it shall not be streaked or imperfectly mixed, any appearance of this being fatal to its fetching the top price.

It should also be firmly packed, each lump being thrown into the cask with considerable force, and further packed firm with a rammer. This has the effect of uniting the entire body of butter into a solid mass, and forcing off the brine, both important matters in promoting the keeping qualities of this extremely delicate and easily injured article. Winter-made butter, especially where the cows are supplied with a large quantity of roots, is very difficult to obtain of superior quality; yet we consider that it is not impossible to have sweet butter during the whole of that season; and that without even once recognising the unpleasant taste of turnips. This can be accomplished by putting a very small pinch of saltpetre to each pan of milk; strict cleanliness; and above all, churning often; skimming the milk after it has stood not longer than thirty-six hours. Granting that a little more butter might be made by letting it stand longer, that slight loss is amply compensated by superior quality and by the greater value of the milk, which being so sweet commands a higher price than if it had stood for twenty-four hours longer. However tedious the process of churning may sometimes be in very cold weather, it must not be unduly hastened by the addition of warm water, as that brings out the bitter turnip taste, besides destroying the colour and texture of the butter —making it, in fact, almost worthless.

Great care is required to attain success in the management of a dairy; but if there is one thing more than another necessary, that is attention to cleanliness. Unless this point is rigidly attended to it is vain to expect success. Entire failure may not be the result of its absence in whole or in part; but the highest amount of profit, pleasure, and satisfaction which it is capable of yielding will fail to be realised.

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

Annales de Médecine Véterinaire.

HIPPOPHAGIA.

In 1868 the number of solipedes consumed in Paris was 2421, consisting of horses, asses, and mules, yielding about 484,200

kilogrammes of meat. In 1869 the number was 2758, which gave on an average 551,600 kilogrammes, which is an increase of 337 animals, or 67,400 kilogrammes of meat.

The consumption of horseflesh has been considerable in Germany within the last few years. We find from official documents that, in 1861, there were three horse butchers in Berlin; in 1869 there were eighteen. The consumption in 1861 was 519 pounds; in 1869 it was 4026

This increase is principally owing to the great care taken by the police that none but perfectly healthy horses should be sold for human food, the inspection being made before and after the slaughter. Two veterinary surgeons are specially appointed for the inspection, and all meat unfit for consumption is condemned, and the offending parties are fined.

There are horse butcheries on a large scale at Molenbeck, Saint-Jean, Kœlenberg, Vilvorde, and Louvain, of which we will give an account in the next number.

INTERNATIONAL VETERINARY CONGRESS.

At its third meeting, held in Zurich in 1869, it was decided that the next meeting should be in Bruxelles, in 1870, and we were entrusted with the organisation of this fourth meeting. The following is the account which we give of the steps taken with a view of fulfilling the mission entrusted to us; and the motives which have compelled us to renounce it.

On the 1st of December, 1869, we addressed a circular to two veterinary surgeons, members of the congress in the several countries which had taken part in the International Veterinary Congress of Zurich, to be informed to what extent the wishes expressed by that meeting and the two preceding had been adopted by their governments.

On the 13th of December we wrote to the minister of the interior, in order to submit to him the programme we had sketched, and also our views and wants relative to the organization of the projected congress.

We required a building containing a room large enough to accommodate from 200 to 300 persons, with a tribune for the public, besides three or four smaller rooms for the meetings of the sections. We added that the latter might not be absolutely necessary, as we intended to constitute immediately as many sections or committees as there were questions in the programme, on which we should have nominated the *savants*, foreign or denizen, distinguished by their

labours on the special subjects of the questions. These committees or sections would have been directed to send in their reports by the 1st of August in the present year at the latest, to enable us to have them printed and distributed at least a fortnight before the 5th of September, the date fixed for the opening of the congress.

Proceeding thus, we hoped to be able to submit to the meeting some special questions selected from those—of which the solution seemed most important—well-digested considerations and reports on such question, the discussion of which would have been of greater benefit from the fact of being conveniently prepared. This plan constituted, in our opinion, a happy innovation, which would have put the congress on a level with other scientific bodies, which we deemed indispensable for the profound and serious consideration of controverted questions which congresses in general have to discuss.

Finally, we required stenographic presses for the printing of the documents; messengers, &c. But above all, pecuniary means to cover the necessary expenses, and to give to our foreign colleagues a similar reception to those of Hamburg, Vienna, and Zurich.

These demands not having been acceded to, we have been reluctantly obliged to renounce the fulfilling of the mission entrusted to us.

(Signed) A. Thiernesse,
F. Defays,
Wehenkel.

This was followed by the circular No. 1, which has already appeared in the *Veterinarian*.

Circular No. 2.

International Veterinary Congress. — Time of Meeting.—Programme of the Questions for Discussion.

To the Veterinary Surgeons, Agriculturists, &c., of all countries.

Brussels.

Gentlemen,—At the third meeting of the International Veterinary Congress, held at Zurich, 1867, it was decided that it would meet again in the month of September, 1870, at Brussels, and we were entrusted with the organization of this fourth meeting. In conformity with this decision we have to announce to you the time of meeting, and to commu-

nicate to you the programme of the questions which will form the object of the discussions. The first fortnight in September being the most convenient for travelling, we have fixed the opening of the meeting for the 5th of September; the hours and locality will be hereafter indicated, leaving to the meeting to determine the number of days it will remain assembled.

The Congress in its previous sitting having been occupied with the education and practice of veterinary medicine, as well as with sanitary police and jurisprudence, with a view to international interest, we have thought that the subjects in question could not be introduced in the next sitting, except in so far as to record the views expressed as to their importance, and to insist on the utility of putting them in practice.

The question on pleuro-pneumonia epizootica not having been from want of time completely treated at the sitting at Zurich, we have deemed it advisable to reintroduce it in the programme of the next meeting. The considerable losses sustained every year by carbonous affections (*affections charboneuse*) and puerperal fever have induced us to introduce them also.

On the other hand, considering the increasing importance of zootechnia, we have thought it a good opportunity to select a question amongst those which in a science which, at the present time, is much studied, would also most interest the several nations represented in the Congress. In consequence, the subjects which we think should be submitted for the discussion of the fourth meeting of the International Veterinary Surgeons are as follows:

1st. The diagnosis differential and the prophylaxis of pleuro-pneumonia epizootica.

2nd. The etiology and prophylaxis of carbonous fever.

3rd. The diagnosis differential and the treatment and prophylaxis of puerperal fever.

4th. The value of the different modes of improving the breeds of domesticated animals in relation with agriculture and industry.

M. Sonderman, of Munich, would, besides, deliver a report which he is preparing on the best mode of slaughtering animals for the butcheries, and the meeting may, if it judged it necessary, discuss this question also.

In publishing this programme, which we trust the veterinary and agricultural journals will insert, we think that we have satisfied the wishes of our honorable colleagues who desire to be present at the next Congress, to which we also

invite the agriculturists and the principals of great rural economies; in a word, all persons who, like veterinarians, are interested in rural economy.

All persons accepting this invitation are requested to communicate with us, without delay, to the School of Veterinary Medicine, Cureghem Bruxelles.

The Committee of Organization of the Congress,

A. Thiernesse,
F. Defays,
Wehenkel.

This would have been our programme had we been put in a position to fulfil the mission entrusted to us.

Recueil de Médecine Vétérinaire.

FATAL ERRORS IN RABIES.

By M. Decroix, V.S. in the Imperial Guards.

M. Decroix believes that the imagination of the unfortunate individuals who are bitten by mad or supposed mad dogs is often fatally excited by the expressions used by those who describe the malady—such as frightful, horrible, atrocious, &c. Having been in a position which enabled him to study this malady, not only in *books* but also on individuals and animals, either as an observer or experimentally, he endeavours to show that it is not so dreadful as it has been described.

First, that the malady is not so transmissible from the animal to man, or even from one animal to another, as is generally supposed.

From statistics carefully made by M. Renault, "two thirds, at least, of those who are bitten by dogs, either mad or supposed to be, escaped the infection without any medical treatment whatever." If thus two thirds, let us bear this in mind, escape when the wound inflicted is left to itself, what must it be when the wound is medically treated by washing and cauterising? which should be done every time any one is bitten by a strange dog. The chances of transmission are so much reduced that some ignorant quacks have been able to make many believe in the efficacy of their pretended preservatives which, however, possess no other merit than having been for a number of times employed on individuals who would never have taken the malady.

As to the cauterisation with the red-hot iron, which should always be resorted to, whenever bitten by a suspected dog, it is not half so painful as is supposed—the author speaks from experience.

Though the virus remains often harmless when the wounds are left to themselves; although the hemorrhage, the compression, washing, cauterising, &c., considerably lessen the danger of the inoculation, it sometimes happens notwithstanding that the malady declares itself after a certain time. We then have another order of errors and exaggerations. In fact, is the malady as painful, the symptoms as frightful, as is generally imagined by the public? Certainly not. Above all, if the symptoms are not aggravated by the cares of nursing, or rather provocations, however well meant.

Left to himself the patient enjoys long intervals of calm; moreover, the paroxysms which occur from time to time have a great analogy with those of epilepsy and hysteria without either their duration or violence. These paroxysms are the more frequent and violent in proportion as the patient is *tormented* by persons, who with the laudable intention of ministering to his comforts, make him talk, and above all, induce him to take food, drink, or calming potions, &c., against which there is frequently a very strong aversion on the part of the patient, on account of the noise made in pouring them into the glass, which suffices sometimes to provoke a paroxysm. In men affected with rabies, contrary to the common notion, the disposition to bite is very rare.

By removing all causes of excitement, only speaking to answer questions, and giving nothing but what the patients ask for, in a word, leaving them in the most perfect calm, we have then rabies in the normal state, by far less terrible and convulsive than when artificially provoked, which we commonly observe under these conditions. Rabies is not more painful than many other maladies, as, for instance, strangulated hernia, volvulus, tetanus, &c.

But, again, is the malady absolutely incurable? are those who are attacked irrecoverably condemned to die in three or four days? No, no! the author says. Rabies is not infallibly a mortal malady, and those attacked by it should not give themselves up to despair, which in itself may cause death; of this there are some deplorable instances. This assertion is not founded on a theory scientifically elaborated, but on facts, some of which have been published in a memoir which obtained the prize of the Society of Medicine of the department of the North.

In order to decide some points relative to rabies it was

found necessary to inoculate the virulent saliva in dogs. It is true that most of them fell a sacrifice to the malady, but what is remarkable two amongst them, though they showed all the symptoms of successful inoculation, unexpectedly recovered by the sole efforts of nature.

Rabies, therefore, when left to itself is curable. The author repeats left to itself, because he is convinced that the so-called classic treatments are more likely to kill than cure.

The author is not the only one who has seen dogs affected with rabies recover: several cases of cure have been observed in the veterinary school at Lyons. These cases of cure were also effected without treatment, the dogs were left to themselves in their kennels.

The records of human medicine contain also some cases of recovery in the human subject; in the course of the present year a doctor accidentally inoculated himself with rabid virus, being attacked by the malady was cured by the use of hot baths. M. Decroix is convinced that the cure was effected more by the patient being left quiet than by the baths, which in this case being according to the wish of the patient did no harm, but had they been imposed as a treatment they might have contributed to provoke the paroxysms, and thereby hasten the fatal issue. In the present state of medical science all remedies employed ought to be tried on animals first, until their curative virtue has been fully established by experience. The best thing to be done in human as well as veterinary medicine is to carefully remove all causes of excitement in order to prevent as much as possible the return of the fits, thereby giving nature a chance to combat the malady. By these means cases of recovery would be more numerous and a ray of hope might be instilled in those who are unfortunately affected with rabies.

Conclusions:—

1st. The bites of rabid dogs are rarely followed by the invasion of the malady.

2ndly. Rabies, when all causes of excitement are carefully avoided, is neither more frightfully cruel nor painful than many other maladies.

3rdly. It has been shown by experience that rabies is curable by the sole efforts of nature.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF THE COUNCIL, HELD MAY 31ST, 1870.

Present—Professor Simonds, Assistant Professor Pritchard, Messrs. Broad, J. C. Broad, Cartledge, Cartwright, Cowie, Ernes, Field, Fleming, Gowing, Greaves, Harpley, Hunt, Pritchard, Robinson, Silvester, Wilkinson, Withers, and the Secretary.

Thomas Greaves, Esq., in the chair.

It was moved by *Professor Simonds*, and seconded by *Mr Ernes*—

"That the Secretary read the minutes of the annual general meeting of May 2nd, referring to the election of six members of the Council, and one in the place of Mr. John Lawson, deceased."—Carried.

The Secretary read the portion of the minutes referring to the names of those gentlemen who had been elected members of the Council.

The election of a President was then proceeded with.

It was moved by *Professor Simonds*, and seconded by *Mr. Cartledge*—

"That J. Wilkinson, Esq., Principal Veterinary Surgeon to the Army, be elected President for the ensuing year."

On the ballot being taken,

John Wilkinson, Esq., was declared to be unanimously elected.

Mr. Wilkinson having taken the chair, returned thanks for the great honour which the Council had been pleased to confer upon him.

The election of six Vice-Presidents was next proceeded with.

The following gentlemen were proposed, viz.:—

Professor Brown	by Mr.	Gowing.
Mr. Alex. Lawson	,,	Cartledge.
,, E. O. Harrison	,,	Harpley.
,, E. C. Dray	,,	Broad.
,, M. E. Naylor	,,	Hunt.
,, C. Lowe	,,	Ernes.
,, G. Balls	,,	Silvester.
,, G. Armatage	,,	Fleming.
,, G. Morgan	,,	Greaves.
,, W. Thacker	,,	Field.
,, Hugh Ferguson	Assist. Prof.	Pritchard.

On the ballot being taken, it was found that there were for—

Professor Brown	19
Mr. Alexander Lawson . .	14
,, E. O. Harrison . . .	14
,, E. C. Dray	13
,, M. E. Naylor . . .	11
,, C. Lowe	7

The election was declared to have fallen upon Professor Brown and Messrs. Lawson, Harrison, Dray, Naylor, and Lowe.

The election of a Secretary was then proceeded with.

It was moved by *Assistant Professor Pritchard*, and seconded by *Mr. Gowing*,

"That Mr. Coates be re-elected Secretary."

On the ballot being taken Mr. Coates was declared to be unanimously elected.

It was moved by *Professor Simonds*, and seconded by *Mr. Cowie*—

"That a vote of thanks be given to the late President for the zeal and energy displayed in the office which he had held during the past year."—Carried unanimously.

Mr. Thomas Greaves returned thanks, and gave up his key of office.

The President announced that a special meeting would be held on Wednesday, June 15th.

A copy of a work entitled 'The Report on the Cattle Plague in Great Britain,' presented to the library of the College by Dr. Alexander Williams, of the Veterinary Department, Privy Council Office, was laid on the table.

The President then moved that a letter and vote of thanks be awarded to Dr. Alexander Williams for his kind and valuable presentation.

By order of the Council,

Wm. Hy. Coates, *Secretary*.

SPECIAL MEETING OF THE COUNCIL, HELD JUNE 15TH, 1870.

Mr. Wilkinson, President, in the Chair.

Members Present: The President, Professor Brown, Assistant-Professor Pritchard, Mr. Ernes, Mr. Fleming, Mr. Hunt, Mr. Silvester, Mr. Lawson, Mr. Harpley, Mr. Gowing, Mr. Lowe, Mr. Naylor, Mr. Cartwright, Mr. Field, Mr. Cowie, Mr. Robinson, Mr. Withers, and Mr. Coates.

The Secretary read the notice convening the meeting, after

which the minutes of the two previous special meetings were read and confirmed.

Mr. Ernes, alluding to the report on the cattle plague which had been presented to the Council, said he thought as it had been printed at the public expense, the public ought not to be required to pay for it. It was sold at 12*s.*, but if any benefit were to be derived from a perusal of it, the Government ought freely to distribute it, or at all events present it gratis to the members of the veterinary profession. It was printed and got up at the public expense, from evidence obtained gratis from members of the profession, some of whom at the time of the Royal Commission came from different parts of the country; he did not know whether their travelling expenses had ever been paid.

Professor Brown: Yes, to all who applied for them.

Mr. Ernes said he himself had not. He did not think it was fair that the profession should have to pay for the report as well as give evidence. He had lost a whole day, and had sent in a report of what he knew to the Royal Commission, yet now he was expected to pay 12*s.* for another report. It was a great anomaly and a disgrace that a medical man should be at the head of the veterinary department. It was treating the veterinary profession in a way in which it was not treated anywhere on the Continent.

Mr. Cowie thought inspectors at least ought to be supplied by the Government freely.

Mr. Ernes said if it was necessary to have a motion, he would move that the Government should be asked to supply at least veterinary inspectors with copies of all their reports; he would even go further, and say it was necessary to supply all breeders and cattle-owners.

Mr. Ernes said the report was good in itself; but in reference to the former report it was said on the Continent that the illustrations were exaggerated, or otherwise that the English cattle plague must have been something of a complication of the real cattle plague with the eczema.

The President thought any application to the Government such as that proposed by Mr. Ernes would fail because other reports which members of Parliament would make application for, have to be paid for.

Professor Brown hoped that no such motion would be made, because the Council would thereby only render itself ridiculous.

Mr. Hunt supported Mr. Ernes' view, that all inspectors ought to be supplied with all the information it was in the power of Government to give. He did not think it would be

much out of place to make some representation to Government to that effect.

The motion by Mr. Ernes not having been seconded, the discussion on the subject then dropped.

The Secretary announced the receipt of letters from Professor Brown, Mr. Lawson, Mr. Dray, and Mr. Naylor, acknowledging the honour of their appointment as vice-presidents; and also a letter from Mr. Walley, inquiring if rejected candidates would be required to attend a full session before re-examination, or only a part of a session.

A letter was then read from Mr. George Armatage, asking the President and Council to grant the use of their board-room for the holding a preliminary meeting to elect office-bearers, &c., of the Central Veterinary Medical Association.

Mr. Gowing proposed "That the room be granted for the purpose of a preliminary meeting."

Mr. Fleming seconded the motion, which was agreed to.

The President: This does not bind us in any way to grant them the use of this room for future meetings.

A letter was read from Dr. Dunsmure, of Edinburgh, enclosing a list of drugs and chemicals which he wished sent to him, and stating that the examiners had agreed next season to go to Glasgow to examine students there.

The President: This is in a very informal state, and I think every matter that is transacted by this College ought to be in a strictly official form. My object in requesting the secretary to read the letter was for the purpose of asking your permission for him and myself to put ourselves in communication with Dr. Dunsmure in order that we may have some official document to present to you at a future meeting, and may, if possible, come to some arrangement for proposing some matured scheme at the next meeting.

The suggestion was approved of.

Appointment of a Registrar.

Mr. Silvester proposed that Mr. Coates be appointed registrar for the ensuing year.

Mr. Naylor seconded the motion.

A ballot being taken, Mr. Coates was declared unanimously elected.

The Finance Committee.

Mr. Silvester moved "That the Finance Committee, consisting of the President, Mr. J. C. Broad, Mr. Field, Mr.

Harpley, Mr. Harrison, Mr. Moon, and Mr. Withers be re-elected for the ensuing year.

The motion was seconded by *Mr. Hunt*, and agreed to.

House Committee.

Mr. Gowing proposed "That the House Committee for the ensuing year consist of Professor Spooner, Mr. Harpley, Mr. Harrison, Mr. Withers, and Mr. Cowie."

Having been seconded by *Mr. Cartwright*, the motion was carried.

Parliamentary Committee.

Mr. Ernes said the Parliamentary Committee had not been once called together during the whole of the past year.

The President said during the present year they might need to take action with regard to the Juries Bill.

Mr. Ernes did not think the Council could consistently ask parliament to exempt the profession from serving on juries, as they had themselves struck a similar clause out of the draft bill prepared some years ago.

Mr. Hunt said it was then struck out because it was felt it would be ridiculous to attempt to pass such a clause.

Mr. Robinson thought there was a much better chance of having such a clause inserted at the present time.

Mr. Withers proposed that the Committee for last year, consisting of Professor Spooner, Professor Simonds, Professor Gamgee, Mr. Ernes, Mr. Field, Mr. Fleming, Mr. Gowing, Mr. Harpley, Mr. Harrison, and Mr. Robinson, should be reappointed.

Mr. Naylor seconded the motion, which was carried.

The Matriculation Examination.

The Secretary read the report of the deputation committee upon the subject of the matriculation examination.

Deputation Committee's Report.

The Deputation Committee have to report that at a meeting of the professors and teachers of the Veterinary Schools, held on May 3rd, at the Royal College of Veterinary Surgeons, the following gentlemen being present, viz., Professors Simonds, Tuson, Williams, Wilson, and Assistant-Professor Pritchard, Messrs. Broad, Field, Greaves, Wilkinson, and the Secretary,

Thomas Greaves, Esq., in the chair,

Before commencing the proceedings of the meeting, a letter was read from Professor Young, of the Edinburgh Veterinary College, regretting his inability to meet the deputation committee, and stating that while approving the subjects for the preliminary examination, he trusted that Latin and French would be added to the list at no distant date.

The Chairman then proceeded to introduce the subject of the matriculation examination to the meeting, in order that the professors and teachers of the different schools might discuss the mode best calculated for carrying out the preliminary examination with a view of testing the qualifications of a student's knowledge previous to his entrance to either of the respective colleges.

It was considered that the examination should be conducted by an independent board, such as the College of Preceptors in London, the High School in Edinburgh, and the High School in Glasgow.

The committee have to report to the Council that after considerable discussion the following resolutions were unanimously agreed upon.

First: "That the several courts of examiners be selected by the authorities of the three colleges respectively; and that the boards so selected be submitted to the Council of the Royal College of Veterinary Surgeons."

Second: "That the members of the three boards determine upon a given series of questions, in order that the preliminary examination may be uniform at the three institutions."

Third: "That as soon as possible it be publicly announced that all candidates for admission as pupils into the several veterinary schools, will be required to pass the preliminary examination."

Fourth: "That the expenses in connection with this examination be defrayed by the respective schools."

The President: You have heard the report read which was framed by the Secretary upon the basis of the resolutions which it contains. In my own defence I think I ought to say a few words with regard to it, inasmuch as I did not at the time, nor do I now, agree to the principle which it embodies. I think that this examination should be a perfectly independent one. It should certainly be appointed by this Council. There is a duality in this report which I think cannot be sustained. At the meeting of the committee the representatives of two schools were in favour of having the examining board appointed by the Council, but the other

school was opposed to it; and ultimately, in order that we might make out some report for the consideration of the Council, the two schools gave way to the one. Now, if this is to be a *bona fide* examination, it ought to be done in the most open way. If the Council has the appointment the Board will be perfectly independent of the schools; but I am sure no member of the Council would wish to do anything that would be prejudicial to the interests of the teachers. Whatever we do we are not to do violence to any of the institutions with which we have to deal. It is also the opinion of the Council, I think, that the schools should be dealt with on a perfect equality. It does not signify whether they have three pupils or 300; we must look upon them all as having a right to be schools by virtue of the assent of this institution, and the sign manual of the Queen. All we have to do is to deal with them so as to make matters go smoothly, and I have no doubt we might do a great thing for the profession if we were all of the same mind; but if we are to be interfered with, if our plans are to be set aside or overridden by the feeling of one school, or the suspicion of one school, then our efforts must be unavailing. In furtherance of my views I have proposed an amendment to that report, which I think you will find embraces, in a very succinct manner, all that I consider necessary to be done now.

Mr. Silvester moved "That the report be received."

Mr. Fleming seconded the motion, which was unanimously agreed to.

Professor Brown moved the adoption of the report, which was seconded by *Mr. Harpley*.

The President said the schools had assented to the principle of a matriculation examination, and had agreed to the subjects to which the examinations were limited at present. The deputation was instructed by the Council to prepare a scheme for finishing the affair altogether, and the present report was the result of their labours. The four resolutions which it contained were made out in a great hurry, and there was great difference of opinion respecting them; but it was thought necessary to present some report to the Council, and the present one had been framed. He thought the first resolution objectionable, because if the members of the examining board were to be appointed by the professors, the board would not be independent. The professors of the St. Pancras School entertained the question of a matriculation examination in the most friendly spirit, and expressed a wish to get rid of the onerous duty of examining the pupils that were to be taught by themselves; they also proposed that the College of

Preceptors should provide the examiners, but they never said publicly, until at the last meeting, that they wished to have the power of appointing the examiners. It would be much better for them to let the Council appoint the examiners, so that the schools might be perfectly independent. The gentlemen of the Preceptors' College would not be biassed in any way, and therefore the schools could not gain anything by retaining the appointment.

Mr. Ernes thought if the schools had to pay, as was proposed in another resolution, they ought to have the right of appointment. The Council ought not to have meddled with the preliminary examination at all, but should have confined themselves to the final examination. The Council had no legal right to appoint examiners, and by interfering in the question of a preliminary examination they had drawn a hornet's nest about their ears which would give them considerable trouble.

The President said the Council was working hand in hand with the schools in this matter.

Professor Brown said when he went with the deputation to Camden Town, the President made a proposition to the Governors that the Council should appoint a board to examine candidates for admission to the College, and he well remembered the opposition with which that proposition was met. He (Professor Brown) was perfectly satisfied that the college at Camden Town would never concede to the Council the power of saying who should or who should not enter the college. He did not see what difference it could make in the examination, whether the examiners were appointed by the schools or by the Council. They would be tied down to certain subjects in either case, and would be perfectly impartial men.

Mr. Gowing asked if it was the intention of the professors at Camden Town to examine the candidates themselves or not?

Professor Brown said they distinctly stated that their intention was to appoint members of the College of Preceptors.

Mr. Naylor thought the Council should prepare the questions, which should be uniform for the three schools. The examiners, whether appointed by the schools or by the Council, would then decide which were proper answers.

The President said it was necessary that this matter should be settled very soon, or otherwise the schools would not be able to mention it in their prospectuses, in which case it would not be considered fair to pluck men who were not aware such an

examination would have to be undergone; though for his own part he should be very glad to see such men plucked, as they were not fit to enter the profession if incapable of passing such a preliminary examination as it was intended to give them.

Mr. Ernes thought it would be better to leave the whole subject to the schools, and for the Council not to meddle at all with it.

The President said such a course would upset all that had been done, and offend the schools.

Mr. Withers proposed, "That the first resolution stand as follows: 'That the several courts of examiners shall be selected by the authorities of the three schools respectively.'"

Mr. Fleming seconded the motion.

Professor Brown: You cannot pass the resolutions seriatim.

The President: I will be answerable for the correct conducting of this business.

Mr. Harpley objected to the omission of the last part of the original resolution.

Assistant-Professor Pritchard expressed the desire of the governors of the Camden Town college to bring about an equal matriculation examination between the schools; but at the same time he was of opinion that if the latter part of the original resolution was retained, it would meet with a considerable amount of opposition.

On the suggestion of Professor Brown the resolution was altered to "That it is the opinion of the Council that the several courts of examiners should be selected by the authorities of the three schools respectively;" and agreed to.

The President said the next resolution stood thus: "That the members of the three boards shall determine upon a given series of questions, in order that the preliminary examination may be uniform at the three institutions." He did not think this could be easily carried out. It would be better to leave the questions to the examiners themselves.

Mr. Naylor thought the plan might be carried out in the same way as at Oxford and Cambridge local examinations, by means of printed questions, which, after the pupils had answered them, were sent back to the universities and examined. A similar practice prevailed with regard to the Pharmaceutical Society's examinations.

Assistant-Professor Pritchard in reply to a question from the President, said he thought it would be agreeable to the authorities at St. Pancras that the examinations should be as nearly as possible uniform.

Mr. Ernes moved "That the resolution be agreed to." This was carried.

Professor Brown proposed that the next resolution should be agreed to: "That as soon as possible it be publicly announced that all candidates for admission as pupils into the several colleges will be required to pass the preliminary examination."

Mr. Ernes seconded the motion, which was agreed to.

On the fourth resolution, with regard to the payment of the expenses of the preliminary examination,

Mr. Ernes moved that the fees for the preliminary examination should be defrayed by the candidate.

The President suggested that each applicant should pay a sum of 10*s.* 6*d.* towards defraying the contingent expenses of the examination.

Mr. Naylor said the practice was to divide the expense according to the number of students. In every instance the expenses of the examination fell upon the candidates.

The President said such a plan might be practicable where the examinations were at stated periods, but it would be necessary in this case that the examining board should be a permanent one, and should examine a pupil or pupils whenever they presented themselves for examination. Pupils arrived at the schools at all seasons of the year. It was therefore necessary to have a fixed sum.

Mr. Ernes: Let the pupil pay all expenses, even if they amount to £5.

Mr. Naylor said he would approve of the preliminary examinations being held at fixed periods, but not of the sum being limited in any way. He thought persons who already held certificates from Oxford or Cambridge, or any other acknowledged educational body, ought to be admitted to the schools without a preliminary examination.

Mr. Fleming considered it would be injudicious to fix a price, as the Council did not know what the cost would really be.

The President said there were many examinations for which 10*s.* 6*d.* was charged by the gentlemen from among whom the examining boards would be chosen.

Mr. Naylor seconded Mr. Ernes' motion.

The President thought unless a sum was fixed the expenses might be very heavy upon those who came at odd times for examination.

Mr. Ernes: We cannot help that. We cannot make a law for every one. Let them come at a proper time.

Mr. Ernes' motion was carried, and the resolution then

stood, "That the expenses in connection with the examination be defrayed by the respective candidates."

Mr. Silvester moved the addition of the following resolution to the report: "That any candidate applying to enter the veterinary college as a student possessing a certificate from Oxford, Cambridge, or any other acknowledged educational board, shall be admitted without the usual preliminary examination."

Mr. Naylor seconded the motion.

Mr Robinson thought this was a more direct interference with the colleges and the teachers than even the apprenticeship clause was.

The President said when the apprenticeship clause was framed the schools were at feud with the Council, but now they were all on friendly terms.

Mr. Robinson would consent to the resolution if the words, "It is the opinion of the Council," were put at the commencement.

The resolution was agreed to, with the addition of those words.

Mr. Fleming suggested that the report should be examined before being finally made out, as there were one or two little mistakes in the composition.

Mr. Ernes moved, "That the report as now amended be adopted."

Mr. Cartwright seconded the motion, which was agreed to.

Mr. Fleming proposed "That a copy of the report be sent to each of the schools."

The motion was agreed to, after having been seconded by Mr. Lawson.

The Secretary read his report with regard to the action that had been taken on the Juries Bill.

Mr. Ernes suggested that a programme of the business to be transacted during the session should be made out.

The President said it rested with the individual members of the Council to take the initiative. The Council had a great deal before it this year, but from the specimen of its action that evening, he was afraid they would not do much.

Mr. Withers proposed and *Professor Brown* seconded a vote of thanks to the President for the manner in which he had performed his arduous duties on this the first meeting under his presidency.

The vote was agreed to, and the proceedings terminated.

Veterinary Jurisprudence.

HEAVY FINE FOR REMOVING A DISEASED COW.

A STARTLING case came under the notice of the county justices at Macclesfield, on Tuesday. John Shore, a well-to-do-farmer, of Poynton, was summoned, on the information of Mr. Superintendent Williamson, for removing a diseased cow from his premises on the 29th of May last.

The defendant pleaded guilty to the charge, but stated in exoneration that the animal had not died from disease but from inflammation.

Mr. Williamson said he visited defendant's premises on the 25th and 27th of May, when defendant was warned respecting some of his cattle. On the 29th of May the cow was sold to some "slink-butchers" from Stockport. This was proved by a witness named Thomas Wadsworth, who saw the men convey the carcase away in a cart on the night of Sunday, the 29th of May, and stated that the stench from the blood which had been emitted from the carcase was horrible on the following day.

Mr. Alderman Carr said he attended, as a member of the Board of Guardians for two townships, to ascertain the opinion of the Bench as to the desirability of appointing an inspector to supervise such people as these, as this practice has been carried on to an alarming extent, and had been the cause of much suffering, sickness, and death throughout the country, and in the county of Cheshire more especially.

The butchers who had bought the carcase had been fined £6 each at Stockport.

Mr. Gaskel, the chairman, said the Bench looked upon this as a most serious case. The defendant occupied a respectable position, and had still knowingly endangered the public health to an alarming extent; he had also been previously warned, and there was no excuse whatever for his conduct. He would be visited with the full penalty of the law, viz., £20 and costs, or in default two months' imprisonment.—*North Derbyshire Reporter.*

ARMY APPOINTMENTS.

WAR OFFICE, PALL MALL, *June 7th.*

14th HUSSARS—Veterinary Surgeon Fitzhugh Marshall, from the late Cape Mounted Riflemen, to be veterinary surgeon, *vice* Dawson, transferred to Veterinary Department.

LETTER FROM THE LATE PRESIDENT OF THE COLLEGE RELATIVE TO THE SELECTION OF ANATOMICAL SPECIMENS, ETC., AT THE SCOTCH EXAMINATIONS.

Gentlemen,—The letter of Dr. Dunsmure read before the special meeting of the Council of the Royal College of Veterinary Surgeons, held April 25th, being alluded to, but not published in the proceedings of the Council (see page 490, *Veterinarian*), leaves the remarks I then made in reference to its contents open to a construction I did not intend them to bear; and, therefore, I feel that a fuller explanation is necessary.

Nothing could be further from my wish than to say anything which could possibly imply a want of courtesy on the part of Professor Williams towards the Examiners of the Royal College of Veterinary Surgeons or towards myself; on the contrary, he evinced every disposition to assist the examiners. The temporary delay alluded to in my remarks as to the procuring of anatomical specimens and drugs arose thus: The Professor had promised Dr. Dunsmure some time previously to the examinations that he would supply the specimens, and he thereupon instructed the gentleman who had the charge of the museum and drug room to allow Dr. Dunsmure to select whatever he might want for the purpose, but he considered that it was no part of his duty, nor would it be right for him to select specimens to be used in the examination of his own students.

Yours, &c.,

(Signed) Thomas Greaves.

VETERINARY BENEVOLENT SOCIETY.

MUNIFICENT GIFT.

Miss Dick, sister of the late Professor Dick, has notified to the President of the Veterinary Benevolent Society, Peter Taylor, her intention of presenting the handsome sum of £100 to the funds of the institution. Such patronage and support is most encouraging to the founders and members of the Society, and suggests to those of the veterinary profession who are in affluent circumstances to "go and do likewise."

OBITUARY.

We much regret to have to record the following deaths:

Mr. James Burt, M.R.C.V.S., Royal Artillery. Diploma bears date Nov. 25th, 1797.

Mr. Charles Percivall, M.R.C.V.S., Royal Artillery. Diploma bears date April 21st, 1815.

Mr. John Legrew, M.R.C.V.S., 2nd Life Guards. Diploma bears date Jan. 13th, 1827.

Also Mr. James Johnston, M.R.C.V.S., of Strichen, Aberdeenshire. Diploma dated April, 1832.

THE

VETERINARIAN.

VOL. XLIII. No. 512. AUGUST, 1870. Fourth Series. No. 188.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from p.* 537.)

In the previous paper, we briefly, and without entering into technical details, surveyed what may be termed the circulatory or nutritive distribution of vessels at the extremity of the horse's limb; and this survey, however imperfect it may be, is neeessary to enable us to form some conception as to the mode in which vitality, growth, and repair are maintained in an organ so peculiarly constructed, and from which so much is demanded. It is also essential to the proper understanding of certain diseases which affect the foot, and the measures to be adopted to combat or avert them, that the extent, distribution, and relative disposition of these vessels should be thoroughly comprehended.

The walls of arteries are, as is well known, so elastic that when cut across they retract for some distance within the cellular tissue that generally ensheaths them; and being circular in shape when entire, they are so strong as to retain their form when so retracted. This elasticity and strength of the arterial walls are favorable to the propulsion of the blood, and these qualities are among the first to strike us as characteristic of the vessels in the foot; their thickness especially, which is very great when compared with their calibre.

Another interesting feature in the pedal circulation, is the manner in which the larger canals supplying the organ with blood break up into innumerable effluents, which again gradually or suddenly diminish in size, but yet communicate with

each other in every possible manner, and compose those marvellous groups of festoon, tracery, and trellis work which we never find ourselves tired of admiring.

This ingenious combination of elasticity, strength, ramification, and intercommunication of the arteries is imperatively necessary in order to overcome what would be otherwise insurmountable difficulties in this region of the body. One of these difficulties is created by the continually dependent condition of the limbs, and the tendency of the blood to gravitate and pass along too rapidly for the purposes of nutrition, especially as there are no muscles to check or modify this force of descent; and another rises from the distance between the foot and the propelling organ—the heart. The impulse the latter communicates to the vital fluid is greatly weakened or dispersed by the obstacles opposed to its course in the smaller divisions of the vessels. The elasticity and thickness of the tubes, and which latter is providentially greatest at their convexities, where the force of the current is most felt, compensate in a large measure for the insufficiency of the *vis à tergo,* as the heart's force has been termed: augmenting the pulsation and giving a renewed propulsion to the blood on its downward course.

The divisions, subdivisions, networks, circles, and arcades of vessels, all more or less related and dependent on each other, have also a great influence on the movement of the blood in the foot. The exceedingly varied arrangement and tortuosity of the multitudinous canals which diverge in every direction, facilitate a free current throughout the organ, while affording an equable and prolonged supply, by forming a kind of reservoir in which an almost unlimited allowance of nutrient material can be stored.

This will be understood better if we imagine two descending columns of blood impelled with the same degree of force, coming in contact in the interior of a transverse canal, or in a *cul-de-sac,* such as the arcade formed by the reciprocal union of two trunks. The immediate result of this afflux of liquid must be a considerable distension of the walls of the vessel, which is momentarily increased in calibre; but this widening again is opposed, and finally overcome, by the reaction that takes place in the thick elastic walls during the intermittence in the "systoles" or impulsive efforts of the heart. This reaction, it will readily be conceived, gives a fresh impetus to the onward current, which was becoming retarded; and, further, this is augmented by the escape of the fluid through either the ends of the transverse canal or the ramifications springing from the convexities of the communicating circles,

in which the stream flowing into the multitude of channels before it, like water through the rose of a watering can, rushes with all the more precipitancy as the pressure of the fluid is more considerable.

Another feature in the remarkable disposition of the arteries in the foot has been noticed to consist in the functional unity that exists between certain parts of that region which are very dissimilar in structure, such as the pedal bone and its envelope; while, again, these parts, normally closely united, are yet to all intents and purposes isolated, and, through this anastomosing, continue to live independently and as if they had no connection. These apparently contradictory properties have been illustrated in the following manner, and the circumstance is worth noting from its bearings upon the physiology and surgery of this organ. The third phalanx and its enveloping membranes (to be presently described) are so intimately related by arteries passing to and from them, that the arterial circulation may be said to be common to both. On the one hand, the divisions and subdivisions of the plantar artery escape from the interior of that bone by ascending and descending branches which spread over its surface and into its covering; while, on the other hand, the vessels that ascend from the network around the coronet also weave themselves into a mesh over that surface, and pass into the bone to meet emerging divisions from the plantar artery; at the same time, the divisions of the artery of the plantar cushion establish communications with others from the artery that courses along the lower convex margin of the bone (the circumflex), which vessel again is only formed by the descending ramifications of the plantar artery. From these divergences and communications between the nutritive vessels of the foot, there result a very complicated superficial and a deep network, in which are mixed up, in order to form a continuous whole, the terminating branches of those arteries that appear at first sight to be specially destined either to the bone or its membranes. In this way there is established a complete functional solidarity between them.

Nevertheless, and notwithstanding this complexity of union, the parts composing this organ have each a vascular apparatus or system so developed that they can live and act in complete independence. Should the marvellous array of structures covering the anterior and lateral aspects of the bone, and known as the vascular laminæ, be entirely isolated from the bony surface to which it is attached by its subjacent network, it would still continue to be supplied by the ascending twigs from the coronary circle; and if separated from

this circle, but allowed to maintain its communications with the bone, it would receive from the interior of that phalanx all the elements necessary to sustain its vitality. Even if isolated from both the coronary circle and the surface of the bone to a considerable extent, but in continuity with them at some point, it would yet obtain from this small source enough blood to ensure its maintaining its health and exercising its functions.

The same may be said of the important membrane covering the sole of the bone; this can live when separated from everything but its connection with the os pedis, and *vice versâ*, if allowed to remain attached even by a shred.

In the normal state, then, there is an intimate vascular unity between the various parts of the foot, while at the same time, as if to compensate for, or be prepared to meet, the accidents to which such a peculiarly constructed organ is liable, each part is capable of isolation and independent vegetation; one branch or trunk can take up the duties of another in addition to its own, and where both are incapacitated by accident or disease, the more minute divisions or ramuscules can again supplement these, and carry on the circulation uninterruptedly.

In other animals, under certain conditions, we find a similar arrangement of the arteries, evidently with the object of breaking the force of the current of blood by dispersing its volume into a number of smaller channels, which retain it sufficiently long for the purpose of nutrition, and yet prevent its accumulating in too great quantity in organs that might suffer from congestion. We have an admirable example of this in what is called the "rete mirabile" of Galen, a wonderful breaking-up of the carotid and vertebral arteries at the base of skull of creatures, which, in grazing, are compelled to keep their heads in a dependent position for a long time; this plexiform arrangement is accordingly most largely developed in grazing animals, less in those which browse, and least of all in the giraffe, which usually feeds with the head elevated. It is also a very marked feature in the disposition of the brachial and femoral arteries of sloths and slow-lemurs, animals with long prehensile limbs, which have great freedom and extent of motion, and yet which, by this sudden breaking-up of these vessels into an innumerable multitude, can enable these creatures to remain suspended by one or both limbs for hours. It is the same in the legs of the goose, swan, and other birds which are accustomed to stand for long periods on either one or both legs; and in the whale family (*Cetacea*) there is an extreme degree of plexiform

multiplication of the arterial system in the intercostal and other vertebral branches, which forms an extensive reservoir of blood for the brain. In other instances, we have the great tortuosity of vessels alone present, as in the carotid artery of the seal, which is nearly forty times longer than the space it traverses.

In the arrangement of the veins we find, perhaps, even more ingenuity displayed than in that of the arteries, in order to permit the return of the blood towards the heart as freely as possible. We have already observed, when speaking of the venous system, that the vessels which immediately spring from the terminations of the capillary or arterial ramifications compose a network so even, though so modified and complicated, that it is impossible to distinguish the course of any particular branch; also that this arrangement is double: an extensive superficial network external to the bone of the foot and covering its surface, and an internal less considerable, accompanying the branches of the plantar artery within the bone. The sum total of these two reticulations offers a greater capacity than that of the arteries, the blood passing from the latter entering larger canals; and though this might appear to favour a slower movement of that fluid, yet it is rendered necessary in order to facilitate a free circulation. This disproportion between the two systems is more or less manifest in other parts of the body; but the necessity for it is most apparent in independent organs, like the limbs, where the circulation has to overcome the effects of gravitation.

As has been indicated by a celebrated French veterinary anatomist, the superficial disposition of the most considerable part of the venous network of the foot is a condition very favorable to the circulation in the whole of the canals; for it puts it immediately under the influence of the general and uniform pressure that the enveloping horny box exercises at each movement over the whole extent of the membranes with which it is in intimate contact and union. Every time the foot is placed on the ground, the third phalanx, on which is concentrated the final *resultant* of all the movements of the heavy mass of the body, is pushed, as it were, deeper into the hoof containing it, and its surrounding membranes, included as they are between its external face and the inner aspect of the hoof, are submitted to a degree of pressure which drives out of them much of, if not all the blood they contain. This fact can be readily and strikingly demonstrated by opening the circumflex or any of the solar veins, an operation yet performed by some veterinarians for the cure of disease. The blood flows slowly from the wound unless pressure be

applied; so that if the sole and wall be seized in a pair of pincers and gently squeezed, the jet increases in force and rapidity coincidently with the application and degree of pressure, and slackens again when it is removed. The same phenomenon is observed when the horse paws with the wounded foot.

In addition to the salutary pressure exercised at each step by the bones and hoof on the membranes which sustain this venous system, the elasticity of various parts of the foot and hoof, brought into play by the movements and weight of the animal, also greatly assists in accelerating the circulation in this organ; the almost incessant dilatations and contractions of these parts supplementing to a larger extent than is, perhaps, generally imagined, the systolic and diastolic action of the heart, whose influence, though doubtless still in operation, must, nevertheless, be greatly diminished at such a distance.

This accession of force to the venous circulation should be most notable within the concavity of the very elastic lateral cartilages, where the convolutions and reticulations of these vessels are most numerous, dense, and close.

That the mechanical effects of movement and pressure most powerfully influence the flow of blood in the foot, is evidenced by the result of compelling horses labouring under congestion, or, perhaps, even inflammation of the laminæ, to walk about. However lame and unwilling these animals may be to travel at first, owing to the extreme pain they suffer, yet owing to the relief afforded by the quickened motion, which empties the over-distended vessels, allows them to regain their normal dimensions, and also enables them to carry on the diminished stream of blood that follows after the congested state, progression becomes easier, and is finally accomplished with tolerable freedom. In this way, what is usually termed "laminitis," but which, in many cases, is only congestion of the laminæ, can be frequently cured in a very short time; while the actual disease may be in its early and, perhaps, even later stages benefited—results which are usually attributed to other means.

A knowledge of the advantage to be derived from the alternate pressure and relaxation of the vascular membranes of the foot, induces us to recommend that horses should be gently led about in hand for some time after a long and fatiguing journey, in order to allow the pedal circulation to become re-established, and to accommodate itself to the lessened demands of inactivity. Allowing immediate relaxation and rest after severe exercise is a very likely means of inducing congestion

and inflammation of the laminæ. Horsemen who have only had observation for their guide, and were unacquainted with the physiological reasons for such a measure, have long followed the practice of walking a horse about after a journey, in order to prevent "stiffness" ensuing.

Veins, as is well known, are thinner in their walls than arteries, and possess but little elasticity; therefore, in certain situations they are particularly liable to over distension. This is the case in the limbs of the horse (and, of course, of other quadrupeds whose extremities are maintained in a perpendicular position), where the weight of the column of blood, which is sometimes as much as four and a half feet high, has to be overcome. The pressure of the column is equal to one seventh of the pressure of the atmosphere; and it is to contend with it that the veins of the legs are provided with valves, which are directed across the interior of the vessels, looking towards the heart or upper part of the limb; when two or more have their free borders in apposition, they effectually prevent any fluid from passing downwards. These, placed at various distances along the inner face of the vein, successfully oppose the reflex or descent of the blood which has already been forced onwards. The immortal Harvey's general description of them is quite applicable to those in the veins of the horse's limbs. "In many places two valves are so placed and fitted that, when raised, they come exactly together in the middle of the vein, and are there united by the contact of their margins; and so accurate is the adaptation, that neither by the eye nor by any other means can the slightest chink along the line of contact be perceived. But if the probe be now introduced from the extreme towards the more central parts, the valves, like the flood-gates of a river, give way and are most readily pushed aside."*

By their means, the long column of blood is divided into a large number of secondary columns, each of which rests alternately upon an ascending pair of valves; so that the comparatively feeble moving power that propels the blood through the veins is only required to overcome in succession the fractional resistance offered by each segment of the column instead of the whole; therefore it is that their presence in the veins of the limb, and their complete functional integrity, is an absolutely necessary condition of healthy circulation.

But these valves do not descend below the coronary plexus of veins, and are, therefore, not to be found in any of these vessels in the foot. There they would be more damaging

* 'On the Motion of the Heart and Blood,' Edit. Sydenham Society.

than otherwise to the free circulation required in such an organ, where local congestion or stagnation of blood is prevented in ordinary, and often even under extraordinary circumstances, by the complexity of arrangement and wonderful freedom of communication existing in the various networks.

From these cursory remarks on the circulation of the blood and the disposition of the blood-vessels, I trust I have been able to show that a knowledge of this branch of the subject is not only interesting, but is of the highest importance with regard to the management of the horse's foot in health, and its recovery when diseased. In another place we will be able to afford some examples of this; in the mean time, we will as briefly refer to another apparatus connected with this extremity, which, if not so marvellous in an anatomical or physiological point of view, nevertheless demands notice from its relations with the organic and sensory functions of the foot. I allude to the nervous apparatus of that organ.

Nerves.—In the region of the horse's foot, there being no voluntary muscles to supply with nervous excitability, there are no motor nerves or, as they are sometimes named, nerves of motion. There is, however, a highly developed system of nerves for the transmission of impressions to the brain: sensations which are rendered necessary by reason of the important part the foot has to play in locomotion. There are also present, to a degree commensurate with the exalted nutritive processes carried on in this organ, those nerves of organic or vegetative life which minister to growth and nutrition, and which, twining and creeping around the blood-vessels to their most delicate ramifications, close as the ivy to the oak, maintain these essential acts to a great extent, if not quite, independent of the sensory or motor divisions of the nervous system.

The nerves of sensation follow, from the fetlock downwards, a direction somewhat similar to that of the arteries and veins. One principal cord on each side largely distributes branches to the skin and the adjacent tissues; this branch is loosely connected by cellular tissue to the main artery of the foot, which lies deeper and in front of it, and the vein, which is also in front but more superficial, all three being in advanee of the flexor tendons, and situated between them and the suspensory ligament of the limb.

The nerve of each side may be summarily described as a large trunk continually sending off branches, the principal of which, two or more in number, are directed forwards to supply the superficial parts of the extremity in front, frequently sending out fibres that pass to each other like the

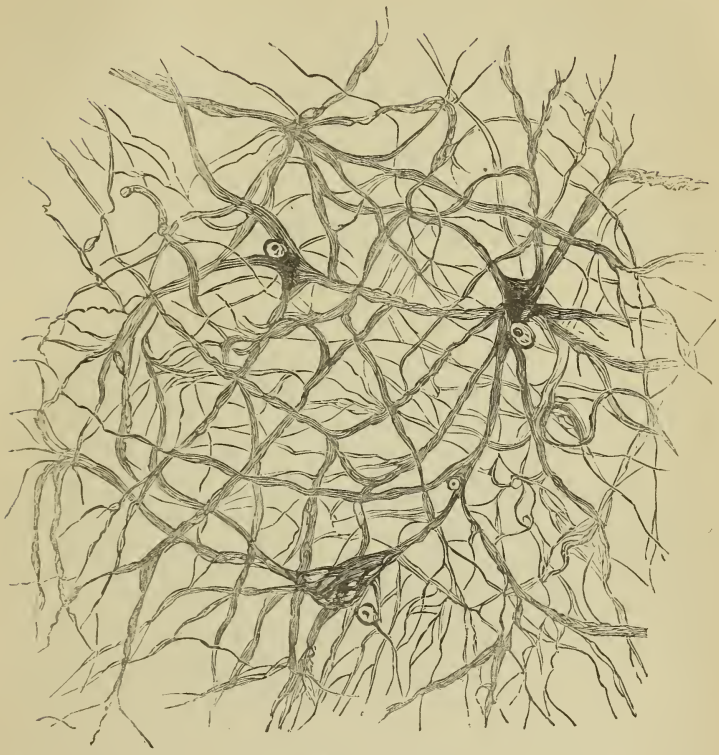


Fig. 11.—Networks of terminal nerve-fibres from coronary cushion, close to the papillary surface; highly magnified.

communicating ramuscules of arteries, giving rise to frequent interlacings. This trunk continuing its course downwards, takes a position behind the artery, and then joining it to enter the groove, in the wings of the pedal bone (fig. 5, *b*), throws off twigs frequently to all the important parts in its vicinity. It enters the bone with the plantar artery, and, like it, distributes itself in the most extensive manner, externally as well as internally forming meshes of radiating filaments which spread over the whole organ. This distribution, or arborisation, if we may so term it, is most noticeable in those parts of the foot which are more particularly destined to serve as the recipients of sensory impressions—as on the surface of the coronary cushion, and the membrane covering the sole of the pedal bone; in these situations the fibres assume their most attenuated dimensions, the networks or ultimate plexuses appearing by the highest powers of the microscope to be com-

posed of the very thinnest dark-bordered twigs interwoven in a very complicated manner. The annexed drawing (fig. 11) exhibits their arrangement in a preparation I made from a small portion of the surface of the coronary cushion.

LACERATION OF THE EYELIDS. REMOVAL OF THE MEMBRANA NICTITANS.

By "Quæsiter."

The other evening about eight a grey gelding, with his head smothered in blood, was brought for me to see; at the first look, in the distance, it appeared as if something very dreadful had happened, owing, perhaps, to blood showing so much more on a grey or white than any other colour.

The horse was very much excited, restive, and unwilling to allow any one to approach him, so that I had considerable difficulty in getting near enough even to examine the injury. After a time, with a little management, I succeeded in washing some of the blood off, and then found that both eyelids on the near side, as also the haw or membrana nictitans, were quite torn through. The stablemen having left work I had not sufficient assistance to cast so unruly a patient, and therefore had to proceed with the necessary manipulations as best I could. A moment's reflection showed me that it would be useless to attempt to bring the torn edges of the membrana nictitans into apposition with a view to their uniting; therefore, with a large and sharp pair of scissors, whilst the horse's attention was diverted, I cut it bodily off, removing the whole. The punishment made the animal still more difficult to manage, but I eventually succeeded in sewing the torn edges of the eyelids together, and that, too, very neatly, by means of metal or wire sutures.

A strong anodyne and purgative draught was administered, as much as anything with a view to produce nausea, and keep the horse quiet; he was then fastened by pillar reins in such a manner as to prevent him rubbing out the stitches.

The night watchman had instructions to sponge the eye from time to time during the night with tepid water, if the horse would allow him to do so.

The next morning at half-past eight o'clock the horse was much quieter, and there was not so much swelling as I had expected to find. The eye was much injected and there was

a copious flow of tears and muco-purulent matter, showing that pus will form within twelve hours, an authenticated fact worth knowing.

Perhaps some of your readers may be able to throw some light on this point, viz. in how short a time has pus or matter been known to form? Authentic observations of this kind are always useful.

The groom accounted for the accident by saying that the horse had had a fit; but I think it more than probable that the wound was caused by a dung fork incautiously left in the stable.

Eleven days after insertion the sutures were removed, and notwithstanding the magnitude of the wound the horse appeared to suffer very little inconvenience from it. The case, in fact, did well from first to last. The sutures were removed in eleven, and the patient was discharged cured in fifteen days.

The horse does not seem to be inconvenienced by the loss of the nictitans membrane, that provision which nature has made for the removal of dust, flies, and other foreign bodies from the surface of the eye. Beyond the anodyne draught and purge which were given as already mentioned, nothing in the way of treatment was done or even required, excepting the observance of cleanliness, which was ensured by frequently bathing the injured parts with tepid water.

FURTHER REPORT OF CASES OF RABIES IN LANCASHIRE.

By W. Worthington, M.R.C.V.S., Wigan.

I again send you a communication on rabies, from which it will be seen that this fearful disease is unfortunately not yet extinct in this part of Lancashire. Since the publication of the four cases recorded in the *Veterinarian* for March, two more have come under my notice in the immediate neighbourhood of this town.

The first occurred on the 1st of April in a ewe at Parbold Hall, the place it will, perhaps, be remembered, where one of the above four cases died, and it was supposed that the ewe had been bitten at the same time as that animal was, as the dogs passed through the flock to which this particular sheep belonged.

The symptoms in no way differed from those usually seen in rabid sheep. Throughout the disease the animal evinced great restlessness by frequently stamping and scraping the ground with the fore feet, and riding on its companions' backs, and with eyes glaring wildly it would back several paces, and then butt furiously at any one who approached it; even a stone thrown towards it on the ground was sufficient to bring on a paroxysm of fury.

Three days after the appearance of the symptoms the ewe was destroyed, and I being in attendance at the time on another patient at the Hall, had an opportunity of making an examination of the head, which alone had been reserved for my inspection by the shepherd. The brain and its membranes were greatly congested, the pharynx and nasal cavities also in a less degree; beyond this nothing abnormal was disclosed.

The second case occurred in the human subject, and is of very recent date; the patient in this instance was a female tramp* who had been bitten very severely on the left arm by a dog in Salford five weeks prior to the appearance of the disease. She was found on the road in a supposed fit, about two miles from here, on the 25th of June, and was brought to the Wigan workhouse, where she was placed under the care of Dr. M. F. Reilly, Medical Officer to the Wigan Union, and where, through the courtesy of that gentleman, I had an opportunity of seeing her along with a medical friend. At the time of our visit she had been upwards of a week in the infirmary, and was in a feeble exhausted condition; but although the symptoms had become greatly mitigated, the characteristics of hydrophobia were still well marked, and closely resembled those which were present in the case of a boy whom I saw many years ago, and who died a month after being bitten, on the third day of the disease.

Occasionally, the woman's countenance would assume a more than usually anxious expression, and when sitting up in bed the patient would fix her eyes intently on some particular part of the room and gaze with intense earnestness for some minutes. There was frequent and deep sighing followed by convulsive startings and twitchings of the limbs, particularly in the injured one, and at times she would snap involuntarily in a quick spasmodic manner with her teeth, and then bury her face in the bed-clothes. Some days previous to our visit there had been total inability to swallow, but she now occasionally asked for water, a little of which she could drink with difficulty. She died on the 13th day after her admis-

* Named Mary Race.

sion to the infirmary, suddenly and unexpectedly, having for some days before her death become apparently convalescent. This case from its long continuance, and the great probability up to the time of the patient's death of her final recovery, is of the greatest possible interest, and will, I believe, be fully recorded by Dr. Reilly in the 'Lancet.' I may add that from the time of her admission into the workhouse she was kept under the influence of hydrate of chloral, which acted most powerfully in subduing the paroxysms.

From the information contained in the interesting table compiled by Mr. Nettleship in the *Veterinarian* for July, and the many cases I have from time to time seen recorded in the newspapers, I think it highly probable that Preston is the centre from which the rabies epidemic now prevailing so extensively through the country has originated. In that town, in the spring of 1869, we have, as far as I am aware, the earliest record of rabies in the north of England. The cases occurring there were followed in a few months by others some miles further south, and almost simultaneously we heard of cases occurring in the counties lying on the east and north of Preston, and gradually extending further from the point of infection as time goes on. Is it not, therefore, probable, that one dog affected with rabies may have been the origin of the cases in Preston, and at the same time have bitten other dogs which propagated the disease to other districts? It will readily be understood how easily the disease *may be* propagated to distant parts of the country when I mention the following circumstance: A terrier belonging to a gentleman in this neighbourhood was severely bitten on November 8th, 1869, by the same dog which bit the four animals referred to in the *Veterinarian* for March. Soon afterwards the owner, who was ignorant of the serious nature of the injury inflicted on the animal, and the danger he was incurring, sold the dog to a dealer in this town, who again sold it shortly after it came into his possession. Immediately this became known, inquiries were made by the police for the purpose of having the dog either kept under surveillance or destroyed; the dealer was applied to, but either could not or would not furnish the slightest information as to its whereabouts. As these men are in the habit of trading with dealers in other towns, it is not improbable that this dog may have been sent many miles, and have since become the source of an incalculable amount of mischief.

The disease appears to be also prevalent in the district of Windermere, and notices have been issued by the magistrates ordering the confinement of all dogs in that neighbourhood.

Unless some such steps are taken in other parts of the country similarly affected, it is to be feared we must not yet expect the extinction of this fearful disease.

OBSERVATIONS ON CASES OF PARTURIENT APOPLEXY.

By A. H. Santy, M.R.C.V.S., Market Deeping.

Should you deem the following practical remarks of sufficient importance to merit insertion in your Journal, I have much pleasure in placing them at your disposal.

Why do so many cases of parturient apoplexy in cows prove fatal? Is it for want of proper treatment? or do we rightly understand the nature of the malady?

I think we must all admit that the brain is the seat of the disease, and that congestion of that organ, sometimes resulting in effusion or rupture of the vessels, is the most frequent cause of death. In one case which I had this spring the animal seemed on the point of recovery, the attendants were agreeably surprised to find so much improvement from the treatment that had been pursued, when very suddenly the animal died. On a *post-mortem* examination I found about one drachm of extravasated blood on the brain. To my mind, however, these are not the worst cases we have to fight against.

We are well aware of that mild form of "dropping after calving," as the disease is called, in which paralysis of the limbs alone exists, and in which the brain may be considered to be healthy. These are the cases in which quacks obtain so much repute for getting the animals up. It is not to such cases that I now refer, but to those in which delirium is followed by total unconsciousness. We find our patient staggering about like a drunken man till she falls. She rolls her head about; makes attempts to rise, perhaps succeeds, and then falls again. Unconsciousness and stertorous breathing, &c., soon follow. Sensation is so completely gone that the strongest liniments applied to the most sensitive parts fail to rouse it in the least.

Now, putting effusion, or extravasated blood, treatment, either good, bad, or indifferent, out of the question, it may be asked, what causes so many fatal cases, and prevents us from achieving that victory over so terrible a malady which our exertions would entitle us to? In my humble opinion it is

suffocation. How is this accomplished, and how to be prevented? It is accomplished thus. The rumen is generally distended; there is an all but total loss of nerve force, only sufficient remaining to carry on respiration. After a time fermentation commences, a portion of the contents of the rumen will be forced into and allowed to pass up the œsophagus into the pharynx, when, in consequence of the epiglottis having lost its functions, as is proved by the administering any fluid in this stage frequently killing the animal at once, the ingesta is sucked or drawn down the trachea into the bronchial tubes, and speedily causes suffocation. This I have seen in very many cases on making *post-mortem* examinations. How is this to be prevented, so as to give art and nature time to effect a cure? for I believe that many cases would recover if it were not for this cause. I fancy I hear some of my professional brethren say, give your medicines by means of a tube passed into the œsophagus; give medicines that will stimulate the nervous system, and have a tendency to correct fermentation. Good: I have done all this; I have succeeded in some of the worst cases, and, again, I have been thrown from the pinnacle of delight at the supposed efficiency of my remedies into the abyss of despair by cases, not apparently so utterly hopeless, terminating in the way I have described. Is the eructation of the contents of the rumen, if I may so term it, always due to fermentation? The rumen is nearly always distended, and the pressure resulting from that distension, acting upon a tube deprived of nerve force, with perhaps the animal's head lying lowest, would be sufficient to cause the contents of the stomach to travel along the œsophagus. I ask the profession, is there a preventive? Would it be practicable to open the rumen and remove the ingesta?

VETERINARY PATHOLOGY AND SURGERY.

By George Lewis, Jun., B.A., Monmouth.

The following cases, selected from many which were seen by me, in company with my father, will probably present nothing novel to senior practitioners; but they may at least prove interesting to the junior members of the profession, and to those who, like myself, are *in limine*. With this view I am induced to offer them to you for insertion in the *Veterinarian*.

Case I. *Diaphragmatic Hernia.*—On July 7th my father

was requested to see a cart mare, the property of a farmer. The history of the case showed that she had been found in the meadow, early in the morning, lying down; she was brought to the stable, and from that time had refused all food; she had evinced pain, and given every indication of what an ordinary observer would pronounce "gripes;" proper gripe medicine had, however, been administered, and the mare, notwithstanding, continued to grow worse.

Symptoms.—Pulse variable both in character and number, sometimes rising to 90, again sinking to 55; extremities cold and hot alternately; paroxysms of acute pain continuing for a few minutes; intervals of repose for fifteen or twenty minutes; animal down and rolling as if suffering from spasmodic colic; urine passed freely; no action on the bowels; respiration during pain slightly accelerated, otherwise natural.

Diagnosis.—Acute inflammation of the bowels, and probably intussusception, together with some peculiar affection of the diaphragm.

Prognosis.—Death.

Treatment.—Suitable medicines were prescribed, enemas thrown up, and hot fomentations applied to the abdomen. All, however, failed, and death ensued.

Autopsy next day.—Upon opening abdomen, the bowels generally, except in being tympanitic, appeared tolerably free from disease; but the removal of the larger intestines at once disclosed the nature of the case. A portion of intestine, nearly two yards in length, had passed through a circular lesion of the diaphragm, about three inches diameter, into the thoracic cavity. An examination of this lesion clearly showed it was not of recent origin.

Case II. *Intestinal Calculus.*—The subject of this case was a half-bred mare, eleven years old. Previous to my father's seeing her on July 8th, she had been ill for four days.

Symptoms.—Refusal of food; tympanitis; pulse 72; respiration natural; extremities normal in temperature; visible membranes slightly injected; slight abdominal pains, not spasmodic; bladder full; straining to void fæces; there had been no action on the bowels for some days; standing position, the hind legs being kept wide apart and extended behind the body.

Diagnosis.—Impacted intestine, probably with hardened fæces, at the second flexure of the colon, or at its junction with the rectum, a mechanical plug being thus formed.

Prognosis.—Death.

Treatment.—Aperients combined with opiates, enemas.

Following day: pulse 90; all the symptoms increased; continue treatment.

10th inst.—The owner came to say the mare was better, and desired my father to attend; but in a few hours a message was received to the effect that she was dead.

Autopsy (Monday, July 11th).—Considerable tympanitis of the stomach and intestines, especially of the cæcum and colon; their contents were in a fluid state; peritoneal and muscular coats healthy, as indeed was every part of the intestine, except at the junction of the colon and rectum. Here the bowel was impacted with a hardened substance which proved to be a calculus. In shape it closely approaches that of the *frustum* of a triangular pyramid, with all angularities rounded off; its base is nearly equilateral, each side measuring about $3\frac{1}{2}$ in.; slant height $4\frac{1}{2}$ in.; weight $24\frac{3}{4}$ oz. troy; the general surface is smooth and polished, except at the centre of each face, where there is a small deep scabrous *fossa* or pit. The portion of intestine enveloping the calculus was in a sphacelated state. The opinion given to the owner was thus justified by the *post-mortem* appearances. I am aware that calculi of various shapes and sizes are frequently found in the stomachs of the cow and the larger intestines of the horse, but I have never before witnessed a *complete* impaction of the smaller intestines in the latter animal from the same cause.

Case III. *Amputation of Supernumerary Limb.*—Our patient was a foal, three months old, having a supernumerary foot growing from the inner side of the fetlock joint of the off fore leg. The foot was, in miniature, beautifully formed, but had become elongated through want of pressure. Having cast the animal and secured the leg, as for the operation of neurotomy, two incisions through the skin were made (one on either side of the foot), meeting in a point superiorly and inferiorly, so that the whole incision resembled the figure of an ellipse placed vertically, and having either extremity of the major axis slightly prolonged. The foot was then carefully dissected out by my father, proper precaution being taken not to wound the capsular ligament of the joint, &c. One vessel was secured by ligature; the edges of the wound were brought as closely together with the interrupted metallic suture as was fitting; a wet compress and bandage were placed upon the part; and the animal was then allowed to rise and return to its dam in the pasture, the only treatment advised being the occasional application of cold water. The animal is progressing favorably.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 549.)

Class II.—Acrogens.

With this class, as was observed by Professor Lindley, a great advance in structure is accomplished. The simplicity which is so remarkable in Thallogens is exchanged for a complicated apparatus of many kinds. All the species have stomates or breathing-pores on their surface. In the great majority there are a distinct stem and leaves, the latter of which are always arranged in perfect symmetry, and in those species which approach Thallogens (as crystal-worts which stand close upon Lichens) the thallus has all the texture of leaves, although a separate stem is refused to them. There is, however, no trace of flowers properly so called, and yet in the involucre of many liverworts and in the spore-cases of mosses an arrangement of leaves occurs which appears to be the forerunner of the flowers of more perfect plants. Sexes, however, are wholly missing, that is to say, nothing can be found that resembles the anthers and pistil of flowering plants except in some vague external circumstance. There is no evidence to show that any order of Acrogens possesses organs which require to be fertilised the one by the other, in order to effect the generation of seeds. Hence those reproductive bodies of Acrogens which are analogous to seeds are called spores, as they are in more lowly organized plants, but in the spore-cases of mosses, the discs of Equisetums, and the sori of ferns we recognise a more highly developed organization than is to be found in the thalliform nuclei of Lichens or Algæ or the gills of Agarics or Boleti.

As with the thallogens so with the present class, we shall first lay down their more general characters in the form of alliances, and subsequently refer to some of their principal orders.

The following, then, are the

Alliances of Acrogens.

Muscales.—Cellular (or vascular) spore-cases immersed or calyptrate (*i. e.*, either plunged in the substance of the frond, or enclosed within a hood, having the same relation to the spores as an involucre to a seed-vessel).

LYCOPODALES.—Vascular, spore-cases marginal, axillary, or radical, one or many celled. Spores of two sorts.

FILICALES.—Vascular, spore-cases marginal or dorsal, one-celled, usually surrounded by an elastic ring, spores of but one sort.

Of these alliances Professor Lindley makes no less than eleven natural orders consisting of four classes, viz. *Hepaticæ*, of which we shall speak of *Equisetaceæ*—Horsetails—*Musci*, Mosses—*Lycopodales*, Club-mosses, and Filicales as the best known types.

Of these, the first group contains the Equisetaceæ, the genera and species of which, under the name of horsetails, are usually described as "*Fern Allies*," but we quite agree that their affinities are rather with *Marchantia*, on account of the elaters to their spores, than with mosses or even ferns or club-mosses, to which they are not closely allied either by habit or structure. Horsetails are common to sandy pools and wet sandy loams in arable lands, and hence they are indicators of silicio-aluminous conditions. They are got rid of by draining and cultivation, but their decidedly siliceous composition makes it possible for some of their species to exist for a long time even under garden cultivation, the Equisetum arvense being often a decided pest in both fields and gardens.

The ashes of some species yield as much as half their weight of pure silica, and it is on this account that the plant is used for the purpose of polishing. In a medical point of view they are unimportant, though said to be diuretic and emmenagogue, in which latter character they may possess some of the qualities of the ferns, but it is questionable whether in this case the observed effects may not be in a measure due to the astringent and nauseating influence of the plant.

Mosses are interesting to the botanist from their great variety in form, structure, and size. They seem to be made for occupying all space, and next to lichens to be everywhere the pioneers of the higher or floral vegetation. Professor Lindley has well observed, "they are among the first vegetables that clothe the soil with verdure in newly formed countries, and they are the last that disappear when the atmosphere ceases to be capable of nourishing vegetation. The first green crust upon the cinders of Ascension consisted of minute mosses; they form more than a quarter of the whole flora of Melville Island, and the blank and lifeless soil of New South Shetland is covered with specks of mosses struggling for existence. How they find their way to such places, and under what laws they are created, are mysteries that human ingenuity has not yet succeeded in unveiling.

In the economy of man they perform but an insignificant part, but in the economy of nature how vast an end!"—*Vegetable Kingdom.*

Not a damp wall or floor, barren rock, mountain top, or spongy morass, but may be the location of some species of moss which from its curious structure can hardly fail if examined to interest the most incurious.

Once they were employed in medicine, but they are now entirely disused. In the shape of peat, which is mostly composed of different species of *Sphagnum*, they form not only the dwelling, but the fuel of many of the poorer inhabitants, especially of Scotland and Ireland; and there is reason to think that much of the coal which has been so abundantly supplied to this country is due to mineralised masses of mosses mixed with other forms of vegetation, especially gigantic Horsetails and Club-mosses. The Club-moss—*Lycopodium* of our flora—is interesting on account of its curious sporules. These, as collected from *L. clavatum* and *L. selago*, form a highly inflammable powder called "vegetable brimstone," which is used for making fireworks, and employed by the pharmacien for dusting pills. Sir W. Hooker says that one species—*L. rubrum*, by him called *L. catharticum*—acts vehemently as a purgative, and has been administered extensively in Spanish America in cases of elephantiasis. The sporules may also be used for dusting excorated surfaces, and there is reason to think that in this way it may be of great value in preventing those abrasions from harness, &c., to which horses are so liable.

Ferns.—Although without flower, yet from the interesting forms of their leaves—fronds—form a highly favorite group of plants, so much so, indeed, that numerous and highly valuable works have been devoted to them alone. They are variously grouped, but for our present purpose it will be sufficient to mention that some forms are of sufficient height and size to be denominated tree-ferns, whilst others are so diminutive as at first to be scarcely distinguishable from the lowly moss.

Of the tree-ferns, some of them have trunks as much as forty feet in height, a careful examination of the boles of which, after all, lead to the supposition that this solid structure is composed of the bases of the leaves in union, and it will be observed that this stem is marked all over with escars of the decayed leaves or fronds, *i. e.* the bases of their stipes.

Arborescent ferns are never branched, though they may be occasionally dichotomous from abnormal growth or accident. The largest tree-fern, like the smallest of the

group, has a vernation which has been described as *involute* —that is, the frond, or the members of a compounded frond, are rolled inwards before expansion, and hence the frond of a young fern presents an appearance somewhat resembling a crosier or shepherd's crook.

The thecæ, or cases containing the sporules, are highly interesting, both in an anatomical and physiological view, and as we consider Prof. Lindley's view of their difficult morphology deserving of the greatest attention, we make no excuse for quoting it.

"The thecæ of ferns may be considered minute leaves having the same gyrate mode of development as the ordinary leaves of the tribe; their stalk the petiole, the annulus the midrib, and the thecæ itself the lamina, the edges of which are united."

As regards these thecæ it will be well to point out that on putting a cluster of the so-called seeds from the dorsum of the common male-fern *Aspidium Filix-mas* these organs may be seen simulating small sacks, which contain the spores, along the dorsum of which is a highly elastic cellular spring; this extending, bursts the sack and frees the sporules.

It is worthy of remark that ferns produce an immense quantity of sporules, which is doubtless a wise provision of nature for the continuance of the species, for when we see that each species has its own chosen locality in some particular soil or some peculiar position, these plants would soon become extinct but for a large superabundance of the reproductive element.

Ferns are great favorites with the lover of plants, and will ever form an admired portion of the herbarium of the collection botanist; but perhaps for their grandeur and variety few plants are less esteemed for their economic or medicinal qualities.

The beautiful maidenhair is used by the French in the preparation of the *Sirop de capillaire*, which Pereira tells us is "prepared by adding sugar and orange flower-water to an infusion of maidenhair, which when diluted with water forms a refreshing drink."

One of our commonest species—the Aspidium Filix-mas—was esteemed by the older Greek and Latin physicians. Pereira says, "It is only employed as an anthelmintic; Theophrastus, Dioscorides, Pliny, and Galen used it as such. The attention of modern practitioners has been directed to it principally from the circumstance of its being one of the remedies employed by Madame Nouffer, the widow of the Swiss surgeon who sold her secret method of expelling tape-

worm to Louis XVI for 18,000 francs. At the present time fern rhizome is but seldom employed in this country, partly because the efficacy of Madame Nouffer's treatment is referred to drastics used, and partly because other agents, especially oil of turpentine, kousso, and areca nut, had been found more effectual. "It is an excellent remedy," says Bremser, "against *Bothriocephalus latus* (the tapeworm of the Swiss), but not against *Tænia solium* (the tapeworm of this country); for though it evacuates some pieces of the latter, it does not destroy it."—*Materia Medica.*

If it possesses the powerful qualities some would attribute to it, it would be worthy of trial with the lower animals, but we are not aware of its having been successfully employed.

The buds of some ferns, especially those of the common brake, *Pteris aquilina*, are boiled and used as a vegetable, and the quantity of sugar, gum, and starch which they contain, points them out as being highly nutritious.

With these remarks we conclude our notes on the non-flowering acotyledonous plants, and shall begin with a description of the flowering plants in our next.

(*To be continued.*)

Pathological Contributions.

CATTLE PLAGUE.

In the Government of Lublin the disease is reported to be dying out, but it still prevails in several districts in the Government of Warsaw. In Polish Russia the pest also continues to commit considerable ravages.

PLEURO-PNEUMONIA.

In Great Britain pleuro-pneumonia is reported to exist in fifty-four counties; the malady, therefore, is still on the increase, and there does not appear to be any abatement in the degree of malignancy which has been characteristic of the recent attacks.

In Ireland the affection, so far as can be judged in the absence of official returns, shows no signs of cessation. We learn from a local paper that an alarming outbreak of lung

disease, known as distemper, has been reported from Bruree, county Limerick. The cattle on several large farms are reported to be extensively affected, and Government has been applied to for measures to check the spread of the disease.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the number of foreign animals brought by sea to ports in Great Britain, which on inspection on landing, within the month of June, 1870, have been found to be affected with any contagious or infectious disease, specifying the disease, and the ports from which, and to which, such animals were brought, and the mode in which such animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Cherbourg	Southampton...	Foot-and-Mouth.	...	9	...	178	187	187
Hamburg.	Hartlepool	„	3	...	...	...	3	3
„	Hull	„	...	...	...	11	11	11
Rotterdam	Hull	„	...	...	...	2	2	2
	Total ...		3	9	...	191	203	203

"ALEXANDER WILLIAMS,

"Privy Council Office, Secretary.
"Veterinary Department, 14th July, 1870."

FOOT AND MOUTH DISEASE.

ACCORDING to the last returns there are fifty-three counties in which foot and mouth disease is prevalent; altogether there are between three and four hundred centres of infection.

SHEEP-POX.

Sheep in this country are free from this terrible malady; but an outbreak has been reported from Demmin, in Stettin.

SCAB IN SHEEP.

Scab still prevails among our flocks in many parts of the kingdom, and instances of death from its ravages have been reported. In Stettin the affection is on the increase.

GLANDERS.

This disease has made considerable progress in the metropolis and its environs, a circumstance which may be reasonably ascribed to the custom of using glandered horses for night vehicles in defiance of the provisions of the Contagious Diseases (Animals) Act.

A report from Konigsberg states that glanders has broken out among the horses at several stations between Memel and Telrot. The first case which was observed was not reported to the authorities, and the disease spread unchecked. An order has been given for the slaughter of diseased animals.

Facts and Observations.

Trichina Spiralis.—Dr. Lindhoir, of Ratzeburg, is reported to have discovered trichinæ in the scirrhous mammary gland of the human female.—*Archives de Virchow.*

Effects of the Drought on the value of Cattle in France.—The foreign correspondent of the *Daily News* writing on July 7th says that "A letter from Napoleonville, in Brittany, dated June 29th, states that the peasants in that neighbourhood, having literally no food to give their cattle, are selling them to dealers for almost nothing, 'even as little as a penny a pound for the live animal.' In Paris an ox

weighing, say 700 lbs., which two months ago was selling for 550 f. or 600 f., now fetches scarcely 350 f.; cows which were worth 300 francs may now be had for 135 f., and even lower; and average size calves have fallen from 150 f. to 70 f. The butcher is the principal gainer by this unhealthy depreciation. As I mentioned lately, good meat may be bought retail at the Halles and some few shops at wonderfully low rates. But the butchers in fashionable quarters do not lower their prices, assuming, perhaps rightly, that when the terrible rise which inevitably awaits in the winter shall come, their regular customers will not like to pay much more than they have been accustomed to do. The force of habit will for a long time produce, in small transactions, results apparently at variance with the law of supply and demand."

The Production of Ozone.—We have heard so much of late years about the beneficial influence exerted by the presence of ozone in the atmosphere, that even non-scientific readers may like to know how it can be artificially produced. Hitherto electricity, phosphorus, and permanganate of potash have been the recognised sources of production; but Professor Mantegazza has discovered that it is developed by certain odorous flowers in a still greater amount. A writer in *Nature* states that most of the strong-smelling vegetable essences, such as mint, cloves, lavender, lemon, and cherry-laurel, develop a very large quantity of ozone, when in contact with atmospheric oxygen in light. Flowers destitute of perfume do not develope it, and generally the amount of ozone seems to be in proportion to the strength of the perfume emanated. Professor Mantegazza recommends that, in marshy districts and in places infested with noxious exhalations, strong-smelling flowers should be planted around the house, in order that the ozone emitted from them may exert its powerful oxidizing influence. So pleasant a plan for making a malarious district salubrious only requires to be known to be put in practice.—*Journal of the Society of Arts.*

A New Anodyne.—Dr. Oscar Liebreich, to whom we owe protagon and the now well-known chloral, is said to have discovered a new anodyne, to which the name of chloride of æthylide (*Æthylidenchlorid*) has been given. This substance is said to be more rapid and agreeable in its effects than chloroform, and has been repeatedly used with perfect success in the clinical hospital of Dr. Langenbeck. Its chief merit is that it can be administered without interfering with the free and natural breathing of the patient. Its effect being tran-

sient, the dose must be repeated in a lengthened operation.—*Ibid.*

Milk a Preservative against Lead Poisoning.—M. Didierjeau, a red-lead manufacturer, has discovered that the use of milk at their meals, which he has made obligatory on his workmen to the extent of one litre daily, preserves those employed in lead works free from any symptom of lead disease. He vouches for the truth and correctness of this communication.—*Ibid.*

Anæsthetics.—M. Sauer, a surgeon-dentist of Berlin, after various experiments, has come to the conclusion that the very best of these is a mixture of protoxide of nitrogen, chloroform, and atmospheric air, as being free from the dangers attending the use of each of the two former alone. The proportions he advises and employs are—Liquid chloroform, 6 grammes; atmospheric air, $\frac{3}{4}$ litre; and 16 litres of protoxide of nitrogen.—*Ibid.*

Chemical Investigation of Condensed Milk.—L. Kofler gives the following tables as the result of his researches. Each of the samples he has examined also contains sugar (purposely added) to an extent of from 25 to 30 per cent., and milk sugar to from 14 to 18 per cent.:—

	Anglo-Swiss Condensed Milk Company	Milk from Sassiu (Prussia).	Milk from Vivis (Switzerland.)	Milk from Kempton (Bavaria).	Milk prepared by L. Kofler himself.
Water.....	22·180	18·824	22·421	18·810	20·770
Fatty matter (butter)	12·260	12·625	12·030	13·650	12·830
Caseine and albumine	28·100	24·240	25·960	24·900	29·600
Ash	2·180	2·482	2·673	2·430	2·865

All these articles were submitted to microscopic investigation and found to be genuine, fit in every respect, when diluted with cold water (in which liquid all these substances were readily soluble), to be used as milk.—*Ibid.*

Phenyl Ether.—When sulphate of diazobenzol is mixed with excess of phenol, nitrogen is evolved, even at the ordinary temperature of the air, while there is obtained, at the same time, a thick, oily fluid, exhibiting an agreeable aromatic smell. When this liquid is treated, first with excess of caustic soda, and next rectified by distillation with steam, an

oil is obtained boiling at from 250° to 255°, which has the same composition as phenyl ether, and becomes solid on cooling, rising again at 28°.—*Ibid.*

The Composition of Fossil and Recent Bones.—M. Scheurer-Kestner states that he finds in bones which have been buried for long periods, besides ossein, which is insoluble in water, another organic nitrogenous substance, soluble in water, and into which he supposes ossein to be slowly changed. Running water gradually removes this soluble modified ossein, and consequently the ancient bones found in loose imperious soils contain very little organic matter, while those buried in compact clay may retain a large quantity of it. The rate of decomposition thus varies with the nature of the soil; but in the same soil M. Scheurer-Kestner believes that the relative age of different bones can, to a considerable extent, be determined by their chemical composition.—*Ibid.*

The Purification of Camphor.—Crude camphor is adulterated with common salt, sulphur, vegetable matter, tar, and water. It is most successfully purified by sublimation in glass flasks of a capacity of 8 lb. to 10 lb., at a temperature of 400° F. These flasks are made of thin glass, with flat bottoms and short necks. They are put into a sand bath, where the heat can be uniform and rapid. The crude camphor is broken up, mixed with three to five per cent. of freshly slaked lime, and one to two per cent. iron filings, well sifted and introduced through a funnel into the neck of the flasks. The flasks are then put into the sand-bath, covered with sand to the neck, and heated gently for half an hour to expel the water. As the temperature increases the camphor softens, and at last melts. After the whole mass has become fluid, the sand is removed from the upper part of the flask, and a paper stopper put in to close it partially. The heat is then carefully preserved at a point sufficient to sublime the camphor, but not to remelt it. In this way a very pure article can be obtained.—*Ibid.*

THE VETERINARIAN, AUGUST 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

TRANSIT OF ANIMALS.

THAT some considerable amount of suffering must be inflicted on the lower animals by man in the exercise of his "dominion over them," no one who looks at the matter fairly will attempt to deny. It can scarcely be pleasant to the beast of the field to be deprived of his power of roaming at will, to be fed and watered according to the dictates of science or caprice, and finally to be driven to the shambles, and, in a manner most convenient to the butcher, converted into meat for man. Not liking any part of the process the beast resists, and must be coerced; life is short, and drovers are not disposed to waste much of their allotted span in the endeavour to coax a refractory ox into a state of gentle obedience. Indeed, in the present state of bovine training, it is to be feared that such endeavours would only end in vexation of spirit; the problem therefore stands, given an animal that refuses to move under persuasion, how much and what kind of force may a being who is properly called "humane," viz., who has the nature of a MAN, employ in order to make the lower creature subserve his will? No answer has been or will be given beyond that which the individual constructs for his own guidance, and it is only when the suffering which is inflicted is manifestly in excess of the necessity that society can rightly insist upon the interference of the legislature. Among the injuries which are obviously unnecessary as serving no good or required object, are those which result from starving, crushing, and suffocating animals, in the act of conveying them by land or sea to their destination. The extent of the wrong which has been done will perhaps never be known, nor is it necessary to inquire further in that direction; the cruelty which has been tolerated in the past will be at least diminished in the future,

or it will be continued only at the peril of those who aid or even permit its infliction. By an order of Council under the Contagious Diseases (Animals) Act, owners of vessels, wharves, or cattle pens are bound under penalties to provide for the comfort and safety of the animals which are confided to their care for the purpose of being conveyed from one place to another. Ships are to be divided into pens, landing places are to have appliances for feeding and watering; cattle trucks are to be provided with spring buffers and proper footholds; animals are not to be overcrowded, and at the principal railway stations there is to be a supply of water. Gradually, step by step, these provisions will be carried into effect, and assuming everything to be in full working order, the question is, how far will the intention of the legislature be embodied in practice? At present we have to deal with one phase of a comprehensive inquiry, that which relates to the supply of water at certain railway stations where the principal cattle traffic is carried on.

Admitting that the provisions are sufficient, and this may easily be the case as far as the mechanical arrangements at railway stations are concerned, there are practical difficulties in the way of ensuring that the animals shall get the benefit of the arrangements which are made for their comfort. Some railway stations have for years had a good supply of water for the use of animals; in some few favoured spots there are meadows and brooks adjacent to the line, and cattle waiting for the trucks are enabled to rest and refresh themselves in peace; but unluckily the animals which most require refreshment, often even in these localities, fail to get it. After standing all day in a hot and dusty market, beasts are driven up to the line only in time to be put into the trucks, in sight of the food and water which they need, and which are by a pleasant fiction (in this case, at least) provided for them. It may and does happen that a number of oxen and sheep are driven from their home a distance of ten miles or more to a market, stand there all day without food or water, and at night are driven to a station where the authorities are bound by law to furnish refreshment which may be so placed that the

animals are unable to reach them, and which no one is or in the nature of the case can be compelled to give them; and the most melancholy aspect of the matter is, that any person who went out of his way to give the famishing beasts a bucket of water, would be at once distinguished from other persons as a "humane man." If the legislature could insist effectually upon a general distribution of that quality which is denominated "compassion," or if all drovers and cattle dealers, not to speak of railway porters, were as impatient of the endurance of thirst in other animals as they are of suffering from it themselves, the chief difficulty would be removed; but in reality the fortitude which enables people to bear with calmness the misfortunes of their neighbours, appears to acquire new strength to endure the pains which are felt by the lower animals. Time and the progress of education will, perhaps, alter all this; but now we can only do our best to insist that all animals shall, as far as possible, be rendered independent of direct human aid in the matter of food and water; to this end proper arrangements in the various cattle markets, of which nearly every little country town has one, would very materially conduce. All such places, even when they are no larger than a pound, are under some sort of jurisdiction, and there can be but few obstacles in the way of supplying food and water, the latter at least being within the animals' reach, every market day.

The vast majority of animals which are sent by railway are previously exhibited in the adjacent market; and if during the time they are bound to stand there they had opportunities of refreshment, all other necessities would be met by the provisions of the Transit Order. Until something is done for the prevention of cruelty to animals in markets, the intention of the framers of the order of May the 12th will be in a great degree sacrificed to the exigences of trade, and a large amount of preventible suffering will be inflicted, if not under cover of the law, certainly in secure disregard of its spirit.

Extracts from British and Foreign Journals.

THE MUCOUS AND PEPTIC GLANDS OF THE STOMACH.

It has been customary to recognise a distinction between the ordinary follicular glands of the stomach and those more complex glands which lie in the vicinity of the pyloric orifice, and which are called peptic glands. In a paper, however, read before the Silesian Scientific Society on the 13th of May, Dr. Elstein has formed an opposite conclusion. His observations were made on the cat, pig, dog, and rabbit. The so-called mucous glands of the stomach are chiefly found in the pyloric region, except a zone having a breadth of about one third or one half of an inch, which is chiefly occupied with peptic glands. The alveoli of the stomach are lined with columnar epithelium, the cells of which, at first closed, subsequently burst, discharging their contents, and becoming replaced by others which were previously subjacent. The cells lining the mucous glands are short, contain a granular protoplasm, with a nucleus at the lower end. The entire series of physical and chemical characters of these cells show that they belong to the typical cells (*hauptzellen*) of Heidenhain. Four or five hours after a meal the mucous glands appear cloudy and shrunken, whilst they absorb colouring matters, as aniline blue, with remarkable facility. The mucous glands secrete a fluid which possesses digestive powers, converting albumen into peptone.

ZOOLOGICAL AND PHYSIOLOGICAL IMPORT OF THE SIZE OF THE RED CORPUSCLES OF THE BLOOD.

In a memoir on this subject by Professor Gulliver in the part just published of the 'Proceedings of the Zoological Society,' some noteworthy observations occur. His discoveries show that the largest red corpuscles of the blood yet known in several genera of one order of Mammalia are found in the order Edentata, and the smallest in the order Ruminantia. He gives figures of them in *Orycteropus* (the Aardvark of South Africa), in the Napu Musk Deer (*Tragulus*), and in the true Musk Deer (*Moschus moschiferus*). Thus the orders in question can be at once distinguished simply by the size of the red blood-corpuscles. And, still further,

several families of this or that order may be thus diagnosed; of which he gives a remarkable and curious proof in the blood of *Moschus*. When this was submitted to his examination by Professor Flower, Mr. Gulliver at once pronounced that, though the corpuscles had the ruminant character, they could not belong to an animal of the same genus or family as the *old Moschus* (now *Tragulus*), and his figures show the differences in point. He confirms the rule, long since discovered by him, that there is a relation, *cæteris paribus*, between the size of the red corpuscles and that of the species of animal in a single family of Mammals; though there is no such relation, as Hewson had shown, in species of different orders,—the Mouse and Horse, *e.g.* As to the comparative smallness of the red corpuscles in the smaller species of a family of Mammals or the class of Birds, he concludes that it is a provision for an increase of the sum of the surface of the blood-discs, as carriers of oxygen in the service of respiration and the production of animal heat, since the aggregate surface of a given bulk of them will be multiplied by their minuteness, and thus the comparatively greater loss of heat by the smaller animals will be compensated, as more fully explained in the report of his Lecture IX, in the *Medical Times and Gazette*, January 17, 1863, and in another of his lectures abstracted in *Scientific Opinion*, December 8, 1869. The doctrine that the size of the red corpuscles has relation to the food of the animal—that the corpuscles are largest in the omnivorous species—he utterly rejects, because, among other reasons, the corpuscles are not larger in the omnivorous pig than in the phytivorous rhinoceros, tapir, and ass, and are as large in the carnivorous Ursine Dasyure as in the omnivorous Perameles. The whole memoir abounds in the results of Professor Gulliver's researches on the sizes of the red corpuscles of the blood, and affords remarkable proof of the value of microscopical observations in systematic zoology. The comparative descriptions and figures in this respect are both interesting and new as regards *Tragulus*, *Moschus*, and *Orycteropus;* and when Professor Flower has completed his long-expected report on the anatomy of *Moschus moschiferus*, we shall know the true position in the zoological scale of this rare animal. At all events, Professor Gulliver's observations have triumphantly proved the importance and significance of *size*, both in a zoological and physiological point of view, as determined by very numerous and careful micrometrical measurements of the red corpuscles of the blood throughout the vertebrate sub-kingdom.

SCIENTIFIC EDUCATION.

That the Government of this country is anxious to advance Science education is plainly manifest from what it has already done, in making large annual grants to institutions which it established, and which it maintains as its own. That it does not consider the present arrangements for this purpose as final or sufficient, is clear from the recent appointment of a Royal Commission to inquire into the whole question of Government aid to Science. The movement which resulted in the appointment of this Commission arose, as we have already explained, from a recommendation of the Council of the British Association for a formal inquiry into the existing state of Science education in this country; and the resolution stated: "That no such inquiry will be complete which does not include the action of the State in relation to scientific education, and the effects of that action upon independent educational institutions." Before the Commission meets, it seems desirable that those interested in advancing Science and Education generally should seriously consider the different position in which Science now stands, as a means of education, to that which it formerly occupied. The time was, and not long ago, when Science was regarded as a thing by itself, having no connection with other branches of education, and useful mainly as a means for rendering men better machinists, better artisans, or discoverers of processes for the advancement of arts and manufactures. Many doubtless hold these opinions at present, and one concludes this to be the case from the very limited view which is expressed by the term "technical education" which is so generally used. Now, if it be desired to promote this view only, and to teach Science alone, and not as a part of general education, Government has established perhaps such schools as might meet the wants of the case, if it can be shown that they fulfil the expectations with which they were founded. But if the higher view, that Science is in its way as important a means of mental training as any other of the branches taught in our schools and universities, then some other method of extending Government assistance for its promotion must be adopted; and it is to this consideration we earnestly hope that inquiries will be directed. Since the first Report of the Science and Art Department, in 1854, sufficient time has been given to show whether the system then originated has answered its purpose. At page 2 of the Report it is stated that its system will be "in the main self-

supporting; while the advantages will be distributed over every part of the United Kingdom; and the assistance received from Parliament be applied for the general good of all." It is generally believed that the system is *not* self-supporting, but that every associate of the School of Mines costs the Government a considerable sum of money. There can be no question that the advantages of the system are very great, directed as it is, in the several branches, by men of the highest possible eminence; but it is urged that they are not to any great extent distributed over the whole country, but mainly collected for the benefit of the technical schools founded by Government, and this tendency to force the official plan of education upon the country is regarded by many connected with other educational establishments as unfair. In fact, there is a threatened crusade against the Government professors.

To such we would remark, that the quantity of Science taught is so small, that it is not wise to attempt in any way to reduce that quantity; but it is certainly to be wished that the Commission should carefully inquire whether this method is one calculated to extend a sound Science education over the whole country, and whether it is possible to judge of a person's fitness to teach, without practical examination in subjects which are eminently practical, and without some guarantee that he has received a sound general education.

The Report further says: "It is essential that the institution should be supported to a considerable extent by the fees of pupils." This, it is urged, is not the case with the London Government school (and still less with the sister College of Science in Dublin), where the fees are not sufficient to pay the working expenses, to say nothing of the salaries of professors, and the scholarships of £50 per annum each, which are held by so large a number of students. At page 9 of the Report the same important subject is dwelt upon: "My lords concur in the views expressed by the Lords of the Committee of Trade, that every means should be used to render these institutions as much self-supporting as possible, and that, in the plans adopted, that object should always be borne in mind. My lords adopt this view, not only because they feel it incumbent upon them to confine the public expenditure to the lowest limit, but also because they entertain a belief that the utility of such institutions is great in proportion as they are self-supporting." It may not be generally known that large sums have been expended, and further large sums are to be expended, in building and fitting up laboratories, lecture-rooms, &c., at South Kensington. The present time, then, is a very fitting one for an inquiry

as to the present wants and resources of the country in relation to the higher science teaching, and the means best calculated to utilize and develope them with due regard to efficiency and economy. If it can be shown that the School of Mines has really done more work than unendowed schools, in proportion to the sums spent upon it, let its sphere of action be enlarged—at South Kensington or elsewhere—and let its usefulness be increased. But it must always be remembered that it professes to give none other than a *special* training: that it in no way supplies the place of universities, colleges, and schools of general education. If, on inquiry, it is found that it has attained the object for which it was established, still that does not touch the recommendation of the Council of the British Association, which includes "the action of the State in relation to scientific education, and the effects of that action upon *independent educational* institutions." It certainly ought to be a subject of serious inquiry, whether or not such colleges as University College, London, which has for forty years trained and sent out into the world some of the most distinguished teachers of Science, which in fact originated the present system of scientific education in union with other branches of education; or King's College, which has in like manner contributed so largely to advance modern education; or Owens College, Manchester, whose students show so well the nature of the education they there receive by the honours and prizes they gain at the London University; or many other flourishing colleges—should have their hands strengthened by Government help. In these institutions a thoroughly sound education, in all branches, is given. They have hitherto depended entirely on voluntary support, but the time has come when larger aid is needed to meet the modern requirements. Scholarships given by Government as incentives to work, and as helps to the many industrious students whose means are limited; stipends to professors, in order that they may obtain teaching assistance of a high character, of which they stand sorely in need, for it is absolutely impossible for them to teach effectively the large classes who place themselves under their guidance; grants for apparatus, and enlarged accommodation for the extension of original research—these are subjects which must occupy the attention of any committee appointed to inquire into the existing state of education. It is now pretty generally admitted by scientific men that no exclusively scientific education can meet our present requirements. On the Continent it is felt that it is only in universities and schools where *all* branches of knowledge are taught, that a really scientific education can be given; and we are glad to

find that this opinion has gained ground in this country, together with a conviction that Science studies in their turn render students more apt in the acquisition of other branches of knowledge.

In Germany there is a strong feeling against the establishment of mere technical schools. It is maintained that boys should receive the same training up to a certain stage, and that they should afterwards enter for the special branch they design to follow. Professor Köchly, of Heidelberg, Professor of Greek, proposes that there should be a thorough but limited instruction in classics, a more extended development of mathematics, a course of instruction in the natural sciences, and systematic instruction in modern languages. Professor Hofmann, who is well known in this country, considers that the best safeguard against the vulgarising of Science, when it is taught with too special a regard to its applications, is to be found in a sound general school training; and he believes that the old gymnasium system is of inestimable value. He asserts that in scores of instances he has seen youths who have come to the chemistry classes in the University of Berlin, with scarcely a knowledge of the meaning of the word chemistry, but who have been well trained in a gymnasium, in a short time completely surpass their fellows, who, in a school of another kind, have acquired considerable knowledge of the elements of chemistry. All the Polytechnic Schools of Germany are rapidly approaching the university type;—the teaching of the *principles* of Science, and not of the applications, is becoming more and more the main object.

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

SPIROPTERA SCUTATA ŒSOPHAGEA BOVIS.

By Professor Müller, of Vienna.

This parasite has been found under the epithelium of the thoracic part of the œsophagus; it is visible to the naked eye, filiform, twisted like a cork-screw, transparent, and of a slight yellow tinge, lodged in the folds of this organ parallel to its length; sometimes it is seen coiled up in the shape of a rounded nodule.

Two of these parasites are frequently found together, one smaller and shorter than the other, either in the same place or close together.

Characters.—In the perfect state the length of the male is from four to five centimetres, that of the female from eight

to ten. The head is truncated, the mouth rounded off, the anterior portion of the body is covered with elongated scales, variable in size and of a pale colour, which decrease in size towards the posterior part, where they gradually disappear. The posterior part of the male is somewhat more curved, and it is winged, the penis is double, situated under the caudal extremity not far from the anus, the testicles are elongated. The uterus of the female is long and filled with a great number of eggs, the vulva is very salient, placed at the extremity of the body, the caudal appendage is efilated and not winged as in the *male*. The eggs are oval-shaped, the shell is very thick, those contained in the anterior part of the uterus contain a finely granulated substance, those of the posterior part contain an embryo which is the more evident in proportion as the eggs are nearer to the vulvular orifice; no embryos were found out of the eggs in the uterus.

From six to fourteen couples are found in the same animal.

Mr. Müller has found this spiroptera in five or six œsophagi of Hungarian and Polish oxen as well as in the œsophagus of a horse.—*Œster. Vierj.*, xi, 1869.

TRICHINA SPIRALIS.

Doctor Lindhoir, of Ratzebourg, has found trichinæ in a scirrhous tumour of a woman.—*Archives of Virchow*, 44th vol.

A FŒTUS IN ANOTHER FŒTUS.

Professor Gürlt describes the presence of a fœtus in the abdominal cavity of a calf; it was constituted as follows:—The left hind leg incompletely developed, and also by a membranous organ representing the uterus, by the skin, and some blood-vessels. According to the author it belongs to the *Edocymian* family.—*Magazin f. Thierheilk*, p. 347, 1869.

AUSCULTATION.

The bruits in the vascular system are produced by the passage of the blood through the vessels with a certain force.

The following experiment demonstrates what takes place in the vascular system. If we force through a tube some liquid holding in suspension some coloured molecules, it will pass in a regular stream without *bruit* as long as the pressure is not forced; if the pressure is increased the molecules quit the periphery to accumulate in the central part, and a bruit is produced at the same time.—*Berlin Klin. Wochensch.*, 1869.

PERCUSSION.

The tympanic sound in solid bodies is produced: 1st. When the parts percussed have the form of a plate or branch, and one of its dimensions exceeds the other.

2nd. It is more intense when the object percussed is fixed at certain points.

3rd. It depends on the duration of the contact of the object percussed; if this contact is prolonged there is no tympanic sound.

The tympanic sound in cavities filled with air is produced:

1st. When one diameter of the cavity percussed is greater in a certain proportion than the other.

2nd. It is more intense when the percussion is on the part which is toward the longest diameter.

3rd. It is only produced when the duration of the contact is very short, and the membrane of the cavity not tense, or the cavity is of a large size.—*Allgein. Wien. Zeit.*, p. 474, 1869.

AIR IN THE VEINS AND ARTERIES.

The results of some experiments by Dr. Uterhart, of Rostock, are—

1st. That air injected in the veins at a distance from the heart has no effect on the health of the animal.

2nd. Air injected in small quantity in the vessels in the proximity of the heart causes death preceded by symptoms of cerebral anhæmia.

3rd. Air injected in large quantity in the arteries has no influence whether the injection is made in the central trunk or on the peripheric end of the vessel.—*Berlin Klin. Wochensch.*, p. 43, 1870.

GLANDERS AND CARBON.

The results of the observations of Semmer, prosector of the veterinary school at Dorpat, prove that glanders may be transmitted from one horse to the other by the intermediate volatile virus at the moment when the animal which is exposed to the infection is predisposed to take glanders.

Viborg, Wunderlich, and others have already spoken of the possibility of this transmission by the intermission of the products of the exhalation of the glandered horses.—*Oesterreich Viertelj. f. w. Thierheilk*, i, 1869.

Garlach, director of the veterinary school at Berlin, has also ascertained that the cutaneous and pulmonary exhalations from horses affected with glanders is impregnated with the contagious virus.—*Jahresbericht der Thierarzneisch* in Hanover.

Semmer, after having reported that facts of transmission of carbon by volatile virus have, as it appears, been observed, adds, these facts, if confirmed, prove that there is no fixed contagious virus, and that for those hitherto considered as such, it is necessary before they take effect that they should

possess a certain degree of concentration, or else there should be a certain amount of predisposition on the part of the individual to be contaminated.—*Oesterreich Viertelj.*, i, 1869.

TORSION OF THE UTERUS.

Obig relates three cases of torsion of the uterus in which he had recourse to the incision of the abdominal parietes, to replace the organ. In two cases the operation was attended with complete success; in the third, the uterus was of an extraordinary size and weight, and the replacing could not on that account be effected. Obig proposes in future to facilitate this operation by means of a cord made in the shape of a handle to raise the organ with.

Heichlinger also reports a case of torsion of the uterus, operated successfully in the same way, only the cow thus operated on died of gangrene of the uterus.—*Wochenschrift Thierheilk.*

POISONING BY NITRATE OF SODA.

Lies, of Brunswick, was called to attend three cows, to which had been given by mistake 432 grammes of nitrate of soda instead of the sulphate.

The animals were agitated; there was trembling, expulsion of intestinal gas, abundant ptyalism; the animals fell down, and suddenly got up, to fall down and get up again; the tongue hung out of the mouth, the eyes were turned in the orbits. On the autopsy the three first stomachs were found full of injesta, which had undergone hardly any modification by the gastric juice. The epithelium had lost its adherence, the mucous membrane was congested and ecchymosed, more particularly at the borders of the reti of the reticulum. The fourth stomach and the small intestines were of a cherry-red colour; the stomach contained a dirty-brown liquid. Chemical analysis showed the presence of nitrate of soda in the contents of the viscera.—*Wochenschrift Thierheilk.*

POISONING OF SEVEN ANIMALS (BOVINE) BY A SOLUTION OF TWELVE KILOGRAMMES OF CHLORIDE OF SODIUM, GIVEN IN A MISTAKE INSTEAD OF THE USUAL WATER TO DRINK.

The same evening three cows and two heifers were ill; they presented the following symptoms:—Decubitus, agitation, loss of appetite, suspended rumination and thirst, slight increase of pulse, alvine evacuations normal. The next day the two heifers remained constantly in the recumbent position, with the legs extended and the head thrown back, foaming at the mouth, the body was cold, moaning, moderate tympanitis; they were unable to get up; the evacuations

were liquid, and of a slightly green colour, mixed with mucus and blood; they died from twenty-one to twenty-four hours after the ingestion of the saline solution.

The three cows showed the same symptoms, and died from thirty to thirty-six hours after the ingestion of the solution.

Autopsy.—General inflammation of the mucous membrane of the intestines.

Mayr, the author of this observation, put the query whether this poisoning is not owing to some foreign substance mixed with the chloride of sodium—such as the salts of iron.—*Ibid.*, 1869.

No account of the two remaining.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING, JULY 6TH, 1870.

The President, John Wilkinson, Esq., in the Chair.

Members present—The President, Professor Simonds, Professor Gamgee, Mr. Fleming, Mr. Broad, Mr. Silvester, Mr. Withers, Mr. Cowie, Mr. Gowing, Mr. Naylor, Mr. Ernes, Mr. Lowe, Mr. Harpley, Mr. Moon, and the Secretary.

The Secretary read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

The President said the Secretary had not clearly understood what had taken place at the last meeting of the Council with regard to the examination of the Glasgow pupils at Glasgow. He had therefore written as usual to Dr. Dunsmure, in a non-official manner, and had received in reply a letter to the effect that the examiners were agreed as to the necessity of their going to Glasgow, and would do so. It was for the Council now to decide whether they would accept that statement as an official one from Dr. Dunsmure.

The Council approved of the suggestion that the correspondence with Dr. Dunsmure, relating to the subject of the examinations being held in Glasgow, should be considered official.

A letter was read from Mr. George Armatage, acknowledging with thanks the permission to use the board-room of the College for the preliminary meeting of the Central Veterinary Medical Society.

A letter was also read from Professor Spooner, enclosing one which he had received from Mr. George Lewis, of Monmouth, and the *Beacon* newspaper, relating to the evidence in a case of breach of warranty, in which it is alleged that a Mr. Constant Morgan, of Usk, stated on oath that he was a

member of the Royal College of Veterinary Surgeons, which statement had been answered by the Secretary notifying that no Constant Morgan's name is on the register.

Mr. Ernes said before the Council took any steps in the matter they should make quite sure that Mr. Morgan was not a member of this College. If it was not an omission on the part of the Registrar, it behoved the Council to take action in the matter.

Mr. Naylor said there were a great number of men who regarded themselves as members of the College, simply because they had been at some school for two or three months.

The President thought it was not the province of the Council to take notice of criminal offences committed by individuals; he therefore proposed the discussion should cease.

Mr. Ernes said if a man in the medical profession called himself a surgeon who was not a surgeon, steps were immediately taken to prosecute him. If the Veterinary Council did not think it was worth while to act in the same manner, the sooner the Charter was abolished the better.

Mr. Field said the College of Surgeons had begun to find that such prosecutions do little or no good.

Mr. Ernes said if the College of Surgeons had been defeated at law, it was no reason why the College of Veterinary Surgeons should be. Steps should be taken to make Mr. Morgan show cause why he called himself a member of the College when he was not on the register.

Mr. Naylor said if Mr. Morgan was to be prosecuted for the alleged offence, the judge at the county court was the person to order it.

The President said it was for the people who had suffered by his testimony to disprove the assertion, and not for the Council. He thought it advisable that no more action should be taken in the matter.

Mr. Ernes moved, "That the question be referred to the solicitor of the College, to consider what steps ought to be taken, if any."

Professor Simonds seconded the motion, which was put to the Council, and negatived.

The following letters were then read:

From Professor Spooner, dated 23rd of June, acknowledging the receipt of a communication from the Council on the subject of the matriculation examination, and stating that it would be placed before the Governors of the Royal Veterinary College at their next meeting.

From Professor Williams, of the Veterinary College, Edinburgh, dated June 24th, acknowledging the receipt of a

communication relating to the matriculation examination, stating that he trusted that nothing would occur to prevent its being carried out this year.

Mr. Ernes said as no communication had been received from Glasgow, he supposed the authorities there dissented.

The President: Professor M'Call is not only thoroughly with us in this matter, but intends to carry out the plan at the Glasgow college.

The Council then proceeded to the discussion of the motion which Professor M'Call had given notice of—"1, That in May, first, and in future, the examination of the students who have been educated at Glasgow Veterinary College for the diploma of the Royal College of Veterinary Surgeons shall take place in Glasgow; 2, That the Council instruct the sectional court of examiners for Scotland to examine the said students in Glasgow accordingly."

The Secretary stated that the consideration of this subject had been unavoidably delayed to the present time.

The President said that at first it was thought there would be some difficulty in making such arrangements as would suit the convenience of the different examiners, but those difficulties had been overcome, and the examiners were prepared to hold the examinations in Glasgow. Mr. M'Call's wishes had therefore been acceded to, and it only remained for the Council to express their satisfaction with the arrangements which had been made.

Mr. Fleming: Has anything been ascertained as to the extra expense of moving the board from Edinburgh to Glasgow?

The Secretary read the letter which had been received from Dr. Dunsmure, stating that the subject was laid before a meeting of the examiners, who agreed to go to Glasgow; that no extra fee would be charged, and that any odd number of students at either school beyond twelve were to be added together, and the fees paid in the same ratio as if all the candidates were examined in one town. The only additional expense would be the hire of a room in Glasgow, gratuities for bringing and removing anatomical specimens, and probably cab hire. As far as the examiners themselves were concerned, there would be nothing extra.

Mr. Field proposed, and *Professor Simonds* seconded, "That the letters from Professor M'Call and Dr. Dunsmure be entered on the minutes."

Mr. Ernes said it was most extraordinary that the Scotch board should take what actually belonged to the Council out of the hands of the Council. If the Council directed the

boards of examiners to go to Glasgow, they would be obliged to go or to resign. The Council should have issued its directions first, instead of which the board of examiners make up their minds and then inform the Council what they had decided upon.

Mr. Cowie said that Mr. Greaves, whilst President, had expressed a wish to know what the mind of the examiners was before the discussion came on before the Council.

Mr. Ernes: I am at a loss to know whether there is any power in the President to do an act for the Council out of this room, or whether he must act only through the Council.

Professor Gamgee: I do not think this collateral discussion is gracious after the decision of the examiners.

Mr. Ernes: I am as courteous as any man, but I do not think the Council should be put on one side. We are the masters, they are—I won't say the servants, because, perhaps, that might be uncourteous, but that is the position they are in.

The motion for entering the letters on the minutes was then carried.

Mr. Silvester moved that the examiners should go to Glasgow to examine Professor M'Call's pupils at the next examination.

Mr. Gowing seconded the resolution, which was agreed to.

A letter was read from Dr. Dunsmure, enclosing a list of drugs, chemicals, &c., which he wished should be provided for use at the examinations.

On the motion of *Mr. Naylor*, seconded by *Mr. Broad*, it was resolved, "That Dr. Dunsmure be requested to obtain the articles required, and forward the account to the Council."

The Secretary announced the results of the April examinations:—

From the Royal Veterinary College, Camden Town, 45 passed, 22 were rejected. From the Edinburgh College, 22 passed, 8 were rejected. From the Glasgow College, 9 passed, 2 were rejected.

Mr. Ernes complained of the manner in which the results of examinations were entered in the Registrar's book. The names of the examiners, he thought, should be given before the names of the students.

Professor Gamgee thought the present mode of entering the results was a proper one, as the book was simply for the registration of the students who had passed.

The Registrar reported the following deaths, viz.:

Mr. James Burt, Mr. Charles Percivall, Mr. John Legrew, and Mr. James Johnson.

The President: The next subject is with reference to the great loss we have sustained by the death of Professor Syme, who was Chairman of our Sectional Examining Board in Edinburgh. I think anybody who had any personal acquaintance with Professor Syme must have felt, while in his presence, that he was before a very great man. He was a man of far higher European reputation than most gentlemen in his profession, and at the same time he was one of the most modest, amiable, kind friends any one could have. He has been attached to our profession for a great many years, and I, personally and as one of the profession, lament exceedingly the loss we have sustained.

Professor Gamgee, in rising to propose that a letter expressing the great regret that this Council has experienced at the loss of so great a man as the President of the joint Board of Examiners in Edinburgh be sent to his relations, said, It is with some difficulty I can speak on the matter. I have known Professor Syme now for a number of years, and he has been, at certain periods of my life, the staunchest and best friend I have had, and he was in reality the friend of our profession. It is not for me to say one word with regard to Professor Syme as a man of science. We know that his reputation was world-wide, and that he attempted not a little to introduce into human surgery certain ideas he obtained from the practice with regard to diseases in the lower animals. He was influenced very much in some of his important operations by his knowledge of comparative anatomy and comparative surgery, so that he was not really a silent spectator, but, with a mind of the broadest grasp, he sought knowledge wherever he could get it. I am certain that, so long as the Board of the College exists in Scotland, we never shall be in a position to have a Chairman more distinguished and more worthy of our greatest respect. I deeply regret the loss, and I think his place can really not be adequately filled, and I trust that an expression of regret will be forwarded from this Council to the members of his family in Edinburgh.

The proposal was unanimously agreed to, and the Secretary was directed to forward a letter of condolence to Professor Lister.

Professor Simonds suggested that the letter to Professor Lister should be drawn up by the President and the Secretary. The Council approved of the suggestion.

The President announced that at the next meeting of the Council a successor to Professor Syme would be proposed for election.

The Secretary then read the report of the Finance Committee and the Treasurer's balance-sheet, from which it appeared that the present liabilities of the College are £88 19s. 8d.; the receipts for the present year have been £795 0s. 4d.; the balance in hand now being £461 7s. 5d.

Mr. Harpley moved, "That the report be received and adopted."

Mr. Lowe seconded the motion, which was agreed to.

Professor Simonds wished to know from the Treasurer whether the calls upon the College purse during the coming year were likely to be great, and whether he thought any more money might be funded.

Mr. Withers thought the College could not afford to fund any more at present; they might, however, deposit £200.

Mr. Lowe proposed that £200 should be invested.

Mr. Fleming seconded the motion.

Mr. Field moved, as an amendment, that £200 should be deposited at the bank.

Professor Simonds said the bye-law did not permit the Council to deposit.

The President said the quarterly expenses amounted to about £60, and it was necessary to provide for three quarters, in which case there would not be £200 left in the Treasurer's hands to deposit. At the Christmas examination there would probably be a deficit, as a great many rejected students would then come up again for examination.

The motion and amendment were then both withdrawn, the matter being left in the Treasurer's hands.

The President asked the Council to take some further action with regard to the practical examination. Notices had been sent to the different schools that the practical examination would take place in 1871 and succeeding years, but no replies had been received.

Mr. Ernes thought no more need be done in the matter, as it was decided to have the examination.

Professor Simonds thought the subject might be in abeyance till the next meeting of the Council.

The President was of opinion that some further communication should be entered into with the schools, in order that all might work in harmony with regard to the examination. There were various circumstances connected with it which would, no doubt, be somewhat difficult to arrange, but if the Colleges worked harmoniously with the Council a satisfactory arrangement could be obtained. He thought the College was strong enough in veterinary professional examiners to carry out the scheme; but if not, a most important considera-

tion would be, whether or not there should be a reorganization of the Board of Examiners, and perhaps an alteration of the Charter.

Mr. Ernes said the Charter merely said that the majority shall be veterinary surgeons.

Professor Simonds proposed that the President be requested to inform the various Colleges that no answer had been received to the notices sent to them.

Mr. Ernes seconded the resolution.

Mr. Fleming thought no further steps need be taken in the matter.

Mr. Cowie said for some time practical examinations had been carried on in the Edinburgh school, and Prof. M'Call would assist the examiners in every possible way, and provide living subjects for them.

The matter was ultimately left to the discretion of the President.

The business of the meeting then terminated.

FORMATION OF A CENTRAL VETERINARY MEDICAL SOCIETY.

In accordance with notices previously issued, a meeting of the members of the profession was held, by permission of the President and Council of the Royal College of Veterinary Surgeons, on the 11th ult. The following gentlemen were present:—Professor Simonds, Messrs. W. H. Coates, G. Fleming (Chatham), W. Field, jun., J. Moon, J. Rowe, jun., J. Ward, C. Offer, T. A. Dollar, F. H. Riddler, T. W. Gowing, sen., T. W. Gowing, jun., A. Broad, jun., J. Woodger, sen., Thomas Burrill, jun., C. Lowe, F. J. Mavor, T. W. Bishop, W. Hunting, J. Moore, jun., J. Woodger, jun., W. Clark, F. Jarvis, J. B. Martin (Rochester), S. Price, and G. Armatage.

Mr. G. Fleming was called to the chair, and briefly referred to the object of the meeting.

Mr. G. Armatage next read the notices which had been sent to members, and letters from several gentlemen who were unavoidably prevented from attending, as well as others from provincial members, expressing their hearty approval of the movement. He also explained that, in calling the meeting, the desires of many veterinary surgeons had been carried out, and also that in using the title "Proposed Metropolitan Veterinary Pathological Society," it was not intended to bind the meeting to accept that designation. The title of the Association, as well as its area of action and future work, would form subjects for deliberation. A letter was read from Professor Tuson, having special reference to the title of the Society, in which the writer expressed a desire to see adopted such designa-

tion as would suitably express the object, while the scope and operations of the Society would not be restricted. Mr. Armatage then briefly stated how he had been induced to move in the matter, and the highly satisfactory results of his canvas among the metropolitan veterinary surgeons, not a single dissentient being found among those upon whom he had called. With perseverance and attention he thought the Society should become representative of the provincial associations, and in its operations no subject connected with veterinary science should be neglected.

Professor Simonds strongly urged the formation of the Society, and fully set forth the benefit that must ensue to the profession. The history of previous associations established in the metropolis was briefly given, and a desire expressed that the movement now being made should be upon as broad a basis as possible, and every means embraced, in order to secure the greatest amount of good to the professional body.

Mr. F. J. Mavor expressed similar views, and the meeting was further addressed at some length by the Chairman, Messrs. T. W. Gowing, sen., T. A. Dollar, J. Rowe, jun., C. Lowe, &c. &c.

A general feeling prevailed that a perfectly independent position should be taken, while every facility and encouragement should be given to the members of the profession in the home counties as well as in provinces generally; and after considerable discussion, in which the subject was presented in every phase, it was ultimately agreed "that the members present resolve themselves into a provisional committee, for the purpose of establishing a Society to be called 'The Central Veterinary Medical Society.'"

A sub-committee, consisting of the following gentlemen, was next enrolled, viz., Messrs. T. W. Gowing, sen., W. Clark, W. Hunting C. Lowe, F. J. Mavor, J. Rowe, jun., G. Fleming, J. Woodger, jun., T. A. Dollar, T. Burrill, jun., A. Mavor, with G. Armatage as Hon. Sec. *pro tem.*, who were empowered to meet on an early occasion, and instructed to consider the propriety of admitting two classes of members—one including all members of the profession, and the other consisting of honorary members, which degree shall comprise the President and office-bearers for the time being of all Provincial Veterinary Medical Associations. The sub-committee here also requested to include in their report to the General Committee the names of those who may be considered eligible to serve as office-bearers, &c., for the Central Society. The sum of one guinea was decided upon as an annual subscription.

It was agreed that permission to use the board-room for the meeting of the sub-committee be asked of the President of the Royal College of Veterinary Surgeons, and in the event of the request not being complied with, Mr. Armatage was desired to make suitable provision, and call together the members as early as possible.

Considerable earnestness was evinced by all present during the discussion of the various points which were considered. Votes of thanks were unanimously accorded to President and Council of the

Royal College of Veterinary Surgeons for the kind grant of the use of their board-room for the meeting, to the Chairman, and the Hon. Sec.

G. ARMATAGE,
Sec. pro tem.

THE LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual Quarterly Meeting of this Society was held on Wednesday evening, the 8th of June, at the Trevelyan Hotel, Manchester.

Present—The President, G. Morgan, Esq., in the chair; Mr. W. Whittle, Mr. P. Taylor, Mr. A. Lawson, Mr. Jas. Brookes, Mr. Wilson, Mr. Cartwright, Mr. Dobie, Mr. T. Greaves, Mr. W. A. Taylor, Mr. J. A. Taylor, Mr. Field, and the Secretary.

The business commenced by the reading and confirmation of the minutes of the preceding meeting.

Mr. Peter Taylor then nominated his son, Mr. William Augustus Taylor, for membership.

Mr. Jas. Brookes also nominated Mr. Mather, of Harphurey.

The *Secretary* nominated Mr. Jas. Lowe, of Bolton, and Mr. Taylor, of Ashton.

Mr. Wilson, of Liverpool, then proceeded to read his essay "On the use of the actual Cautery in Veterinary Practice," which was listened to with earnest attention, and provoked * a very animated discussion.

The following members took a very active part in the discussion: Messrs. Morgan, Greaves, Cartwright, P. Taylor, W. A. Taylor, Lawson, Brookes, Field, and Whittle.

The discussion having closed, a vote of thanks was proposed to the essayist by Mr. T. Greaves, seconded by Mr. W. Whittle, after which the meeting broke up.

W. J. CHALLINOR, *Hon. Sec.*

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

A MEETING of the members of the above Society was held in Cumming's Hotel, Lothian Road, Edinburgh, on Wednesday, June 22nd, at 2 o'clock p.m. Mr. Robertson, V.S., Kelso, President of the Society, in the Chair.

The following members were also present, viz.: Professor Williams, Veterinary College, Edinburgh; Messrs. C. Baird, V.S., Edinburgh; C. Cunningham, V.S., Slateford; J. Borthwick, V.S., Kirkliston; J. Aitken, V.S., Dalkeith; W. Cunningham. V.S.,

* This essay was published in our last number, see p. 530 *et seq.*

Edinburgh; J. Aitken, V.S., Edinburgh; W. D. Connachie, V.S., Selkirk; and J. Mitchell, V.S., Musselburgh, Honorary Secretary.

The minutes of the previous meeting were read and approved, after which Mr. Balfour, V.S., Kirkcaldy, and Mr. Brown, V.S., West Calder, were elected members of the Society.

Mr. Baird feelingly drew attention to the death of one of the members since they last met (Mr. Tod, of Leith), from an insidious disease, which had prevented him from taking such an active part in the affairs of the Society as he would otherwise have done, and at last had cut him off in the prime of life. All present expressed their sense of the loss the Society had sustained by the removal of Mr. Tod.

The business of the meeting now being concluded, the President called upon Mr. Connachie to read the essay of which he had given notice, subject—

ABORTION AND PREMATURE BIRTH IN ANIMALS.

Before proceeding to lay before you some remarks on abortion and premature birth in animals, I may state that it is not the subject that I had originally intended to bring under your notice. But from the fact of the disease having prevailed very extensively in certain parts of the district wherein I practise, and from the frequent inquiry for advice as to its cause or means of prevention, I have been induced to bring the subject before the members of this Association, hoping that I may receive information from the discussion that the subject may give rise to.

The subject is not a new one, it seems to have attracted attention even in patriarchal times. We read of Jacob telling Laban when chiding him for the non-fulfilment of his part of the agreement between them, that "all the twenty years that I have been with you neither the ewes nor the she-goats have cast their young." What were the preventive measures he used Jacob does not condescend to tell us. It must be a subject of regret that they have not been handed down to posterity, as no doubt they would have been of great benefit to the stock breeder. It would certainly have proved a source of satisfaction to the veterinary surgeon to have been able to arrest or avert the losses resulting from the evil of which we propose to speak in the few following observations.

I have met with a few cases more or less every year since commencing practice in Selkirk. But in the years 1869 and 1870 the disorder assumed the form of an epidemic prevailing amongst mares, cows, and ewes. The loss sustained by some of the leading agriculturists in ewes alone was very heavy; and though it may, perhaps, be considered somewhat out of the range of subjects to be brought up for discussion before the members of this Association, it is to that my observations will chiefly apply.

Gentlemen, I think I need offer no apology for bringing this disease under your notice, when it is considered that it is by the breeding and feeding of sheep that many of our farmers have their

wealth. And when sheep sell at as high prices as horses, and a single ram even exceeds in market value the horse, it is high time that veterinary surgeons were making themselves acquainted with some of the more obscure diseases that they are heir to. Every man should have for his motto the words of our national bard: "The world is our country, and to do good is our religion. Whatever tends to mitigate the woes or increase the happiness of others is our criterion of goodness; and whatever injures society at large or any individual in it is our measure of iniquity."

In speaking of abortion and premature birth it is unnecessary for me to notice all the different stages of development that the fœtus undergoes during the period of intra-uterine life.

The term of gestation in the mare is, as you all know, eleven months, or about 330 days; in the cow nine months, or about 270 days; and in the ewe five months, or about 150 days.

Abortion is the act of bringing forth young before the full term of gestation is completed. The expulsion of the fœtus takes the name of abortion when occurring during the first six months of pregnancy in the mare and cow, and the first three months in the ewe. When it takes place after these periods in the different animals, it is generally considered premature birth.

Causes.—The cause of abortion and premature birth has all along been involved in much obscurity; and when we find it occurring under very different systems of feeding and management, we cannot help coming to the conclusion that the true cause or causes have never been very clearly demonstrated. Yet if we ever think about the matter at all, it perpetually recurs to us that it is a difficulty which we must get an explanation of by some means or other before we can arrive at any satisfactory means of cure; or, what is better, prevention.

There are no female domestic animals that are not liable to abort, but the further they are removed from their natural habits and systems of feeding the cases become far more frequent. It used to be stated by the late lamented Sir James Simpson, that abortion occurred far oftener in females in the higher classes of society than in those who moved in the lower walks of life.

Most of you will have observed in the course of practice, that if there is a favorite animal whose owner is anxious to perpetuate her kind, she is put to no work, but allowed to live a life of indolence and ease, and fed on the best of food. How often are the owner's hopes blasted by seeing her miscarry; or if she carry her young till the full time, it will be born a puny helpless creature; while another animal who works hard and regularly, and whose feeding is very poor indeed, brings forth her offspring at full time, strong and healthy.

When speaking thus, I do not wish it to be understood that I advise hard work and bad usage as the best or proper treatment for a pregnant animal. What I would wish to inculcate is the aiming at a medium course of action, and a uniform and regular system of feeding, so that the animal economy may be kept at a proper equili-

brium, bearing in mind that whatever tends to upset the balance of the circulation, must tend to bring on this disorder.

The placenta is subject to congestion and inflammation and its consequences, which may not unfrequently be the cause of the death of the fœtus. There is another cause which seems to me not to have received that amount of attention that is due to it; that is, the allowing the aborted animal to continue to mix with the rest of the pregnant herd or flock, very often leaving the placenta in a semi-putrified state hanging out of the vagina, allowing it to drop off in a state of rottenness, all the time giving off the most offensive effluvia. I daresay you have all seen what a state of excitement a whole herd are thrown into when one of their number happens to be delivered in the open field. Now, when non-pregnant animals are so affected by such an occurrence, what influence must it exert upon animals that are approaching a certain period of utero-gestation.

Symptoms.—These may be divided into two heads, 1st. Those which forebode the approach of the disease, such as a general uneasiness, sudden dropping of the abdomen and filling of the mammary gland, relaxation of the ligaments of the pelvis, and a glairy discharge from the uterus. 2nd. Those which indicate that labour is already begun, increased discharge from the vagina, uterine contractions, and the appearance of the membranes per vaginam.

Treatment.—There is no system of treatment that I am aware of that will arrest the process if already begun; nor do I think it would be advisable to do so if it was in our power, as in most instances the fœtus is already dead, and cannot prove otherwise than a source of irritation to the uterus and injurious to the general health of the mother. Consequently our efforts ought to be directed to assist nature in freeing the uterus from its now useless burden.

Almost the only after-treatment that I have found necessary is to hasten the expulsion of the placental membranes; these may be detained for some time, especially if the process of abortion has been protracted and severe. Should they still be retained after twenty-four hours have elapsed, they ought to be removed mechanically, by gently introducing the hand into the uterus and separating the placenta from its uterine attachments, using gentle traction by the cord, when the uterus will expel both the hand and membranes. Should the fœtus have been dead for some time previous to expulsion, fœtid discharges will continue to come from the vagina. I have been in the habit of throwing up with a syringe a solution composed of one part of carbolic acid to sixty of water, which has the effect of cleansing the uterus and destroying any offensive odour. In all cases of difficult parturition, where the os uteri and lining membrane of the vagina may be lacerated, a little of this lotion applied to the parts with a sponge disposes them to heal very kindly.

I have refrained from saying anything as to the treatment of the offspring. Should it happen to be born alive it is in most cases so sickly that it is almost always best to destroy it at once.

When abortion and premature birth prevailed in the lambing seasons of 1869 and 1870, I had numerous opportunities of examining the bodies of lambs. Many of them had been dead for a considerable time previous to expulsion, as shown by an advanced state of decomposition; others were expelled soon after death had taken place; some were born alive, but only to give one or two convulsive efforts to breathe, and then expire. In every case ascites was present; in some of them the distension from this cause was very great. The want or absence of the liquor amnii was another noticeable feature, which led one very intelligent shepherd to remark to me that it seemed as if the water was all inside the lamb. All the bodies presented a very bloodless appearance. The placental membranes too appeared blanched and bloodless.

What influences were in operation to cause this state of things was and is to me still matter of speculation; for, as I said before, it was found occurring under very different systems of feeding and management; but it may be remarked that, although no two of the flocks were fed exactly in the same manner, all of them in which abortion and premature birth occurred were fed very liberally.

Gentlemen, in concluding these very desultory remarks, I would just say that when any calamity such as this comes upon the stock-owner he naturally looks to the veterinary surgeon for advice and guidance; and it is when we are able to assist him to arrest or avoid it that we prove ourselves fit representatives of a profession of which it ought to be our highest ambition to become efficient members. However baffled we may have been hitherto, let us return to the inquiry, and we shall gain much that will be of use to us in practice and in the course of our investigations.

The discussion which followed was of a very animated and interesting description, and was entered into by all present with great spirit. At the close of the debate Professor Williams brought a horse from the Veterinary College affected with disease of the heart for examination. The symptoms characteristic of this disease were so permanently marked that the members expressed themselves much indebted to the professor for his kindness in affording them an opportunity of examining such an interesting case. Another subject was brought by Mr. Aitken, Causeawayside, Edinburgh, a cart mare, affected with paralysis of the *gastrocnemii muscles* of the hind leg; the peculiar action of this animal was minutely examined and much commented upon by all present. Cases of the kind are of very rare occurrence, and Mr. Aitken was requested to report to next meeting how the animal was progressing under his treatment.

A vote of thanks to the essayist and president terminated the proceedings. The next meeting was appointed to be held in August, when the Secretary will contribute an essay, subject—Bone; some of the accidents and diseases to which it is liable.

JAMES MITCHELL,
Secretary.

PRESENTATION OF PLATE TO PRINCIPAL WILLIAMS, VETERINARY COLLEGE, EDINBURGH.

The students of the above institution presented the Principal, before returning to their homes at the close of the session, with a testimonial, consisting of an elegant silver epergne and two dessert dishes.

Lord Provost Law presided, and was supported by Bailie Fyfe, Bailie Skinner, and others.

The Chairman said that, as one of the trustees of the College, he had great pleasure in being present on such a harmonious and auspicious occasion. He took great interest in the institution, and it was one of the best proofs of its usefulness to the country when the students thus publicly acknowledged their appreciation of the benefit they derived from their principal's services.

Mr. Dorber, in making the presentation, said:

My Lord Provost and Gentlemen,—We are met to-day in this the theatre of the Edinburgh Veterinary College, surrounded, as it were, by the halo of its immortal founder, to present to his representative and successor, as principal veterinary surgeon for Scotland, a testimonial expressive of our gratitude to and our esteem for him as our teacher and the principal of this institution. In doing so allow me to premise that I could have wished the task assigned me had devolved on some one more fit to perform it; but since it has been ordered otherwise, I shall not shrink from attempting the duty, feeling assured that, should I fail in thoroughly echoing your sentiments, you will kindly accept the will for the deed.

Although the present may be considered the age *par excellence* of public testimonials, and unlimited license of speech in sounding the praises of fortunate recipients, still I cannot, nor will I, therefore, indulge in fulsome adulation, feeling assured it would be as offensive to our principal as to you. Indeed, I am, as the mouthpiece of my fellow-students, or as the exponent of their feelings, to speak the truth with all the candour and sincerity that man can do. The object of this meeting must excite in all of us feelings of the greatest pleasure, since its object is to express our gratitude, respect, and esteem for Professor Williams, who, as our teacher, has since his appointment some three years ago earned for himself a high character, both as a teacher and practitioner of veterinary science.

There is no one, I believe, in Great Britain who could have laboured more honestly, successfully, and courteously for the benefit of his students than our principal.

His task has not been an easy one. Strongly must he have found the truth of the old adage—

"Uneasy lies the head that wears a crown."

To aspire to the honorable and onerous position of principal of the Edinburgh Veterinary College—to be a successor to such a one as the late Professor Dick—is an ambition worthy of the most talented within the pale of the profession, and requires an amount of tact and talent possessed by few, and to succeed in it cannot fail to bring around one the envy, and perhaps the hatred, of the unsuccessful and interested; hence the troubles and vexations of such an exalted position. He has had much to battle against, many conflicting interests to encounter, and much to do to keep up with the go-a-head bustling of the age; but we rejoice that he has accomplished all, and that we can and do recognise him as one whose motto is "onward and upward"—one who commands respect, has never belied his trust, and, when viewed as an enlightened hippopathologist and practitioner, is second to none of the day.

We occasionally see, in what might be considered high quarters, an abortive attempt at detraction from this the Scottish school of veterinary medicine, and an ill-timed stab at the memory of him who so ably founded and so nobly endowed it; but such attempts only recoil on the head of their authors, and but support the fact so patent to all, that the Edinburgh school will compare favorably with any at present existing, either as to its pathological teaching and practice, or as to the number of distinguished alumni who have issued from its portals. Only some few months ago we could mention the names of Williams, Strangeways, Dalzell, and Young, each unique in their own special wake, and say that one might take his place in the centre of that quadrilateral, and challenge competition with the world.

But alas! for the stability of all earthly institutions. Two of these have gone for ever from amongst us, and it is superfluous to say how deeply and truly we feel their loss.

To harmonise practice with science is the great desideratum of the present age; its conflicting teachings may sometimes almost overpower us; but we are glad to be able to say that in your teaching and practice, sir, the reconciliation has arrived at a stage till lately only dreamed of. Need I remind you, gentlemen, of the successful application of advanced pathological knowledge to the cure of chest affections, the development of the physiological phenomena of broken wind, the minute microscopical observations on the pathological process of anchylosis—in short, the whole course of pathological lectures, never before equalled—certainly never excelled—which has been delivered by Professor Williams in this College.

These advances and contributions to veterinary pathology, as well as their successful application, warrant us in saying that in you, sir, veterinary science has found one whose name will be found high in its archives when its history comes to be written. True, gentlemen, I cannot point to you our professor's literary productions, the arduous nature of his duties having hitherto apparently prevented his giving time and labour to book-writing; but I doubt not, as time moves on, and he feels more at ease in his irksome sur-

roundings, he will favour the profession with the publication of his excellent lectures.

Too true it is, gentlemen, that we lack much information on pathological subjects with which the human practitioner is acquainted. The whole of veterinary science has been too long confined to a few pocket volumes and *vade mecums*, which are generally little else than a detail of symptoms and a farrago of recipes worthy only of the dark ages; but it is to be hoped that veterinary science will find by and bye sufficient talent amongst its votaries for the production of literary works more allied to those of the other profession in worth and extent.

In addition to our high sense of your qualities as a teacher, sir, it is the opinion we entertain of your personal qualities and kindnesses, unwearied assiduity in all that concerns the welfare of the students of this college; the friendly feeling existing between you and us, as well as the profession at large; your honest labours in our behalf to promote the advancement of each and all; to uphold the dignity of our calling; to maintain the position that the veterinary surgeon should hold in society, and the estimation of the public as second only to the sister science; your ceaseless efforts in imparting to us high and advancing views of our profession; in inculcating the fundamental principles of science, and thus enable us to pursue the practical avocations to which we may be called with credit and success, which has called forth this expression of our feelings.

In thus offering to you this tribute, we are reminded of the saying of a great author, that there is not a more pleasing exercise of mind than that of gratitude. It is accompanied by such an inward satisfaction that the duty is sufficiently rewarded by the performance. It is the inherent impulse of generous minds—one of the purest which influences man; and he who is so influenced feels no greater pleasure than in acknowledging his high appreciation of it by returning kindness with esteem.

Need I ask you, gentlemen, if Professor Williams's qualities, professional and personal, towards us individually, have not been such as to merit the association of such sentiments with his name? Words, empty words, however, in such circumstances have been aptly compared to bubbles upon water, which expand upon its surface, become attractive to the eye, collapse, and vanish, leaving not a trace behind to mark the spot whence they arose, or the causes which gave them birth. This token which is now before you, sir, and which we are about to present to you, is composed of lasting materials, and forms the best answer to such a question. It is the spontaneous effusion of the grateful hearts of a class of nearly one hundred students. And we ought—and I am sure we do, one and all of us—to feel proud of this opportunity of showing to you the respect and esteem we entertain for you.

Allow me, then, Mr. Chairman and gentlemen, in your names to present to Professor Williams this epergne, and in doing so express the hope that he may be long spared to preside over this institution,

and to reap honours, manifold and even nobler than this we give. Let the present hour encourage for the future. No man can honestly exercise himself in any situation as a dutiful and conscious individual without living to realise that his conduct is appreciated by his fellow-men. Such is your position, sir. The warrior well knows that the chaplet of victory cannot wreathe his brow until his brain-sweat trickles adown his forehead; e'en too betimes his chaplet has a lurking thorn in it, for human life must ever run apace with human woe.

Permit me again to express my sincere wish—and in this I know I am joined by all present—that you may long live to occupy your exalted position, and that the blessing of health may be long extended, both to you and yours.

Professor Williams, in reply, said,—My Lord Provost and gentlemen, I feel deeply the kindness exhibited towards me, and I accept with unfeigned gratitude the proofs you this moment present to me of your attachment and esteem. Your generous liberality and kind expressions altogether unnerve me for the duty of suitably acknowledging them, and thanking you as I ought.

I look upon it as a guarantee that my humble endeavours to perform my duties have met with your approbation. Through the kind encouragement I have received, principally from students, whose interests are always dear to me, I have been enabled in some measure to surmount opposing difficulties, and feel highly flattered and gratified by this mark of approval of my conduct hitherto. It has ever been my humble endeavour to discharge faithfully and impartially my onerous duties, and I am glad that the effort is thus far so generally appreciated. Your truthful and touching allusion to our departed colleagues reminds me of the great loss we have sustained; it is needless to say no one has felt it more deeply than I; under present circumstances, however, silence is more expressive than words; but I gladly avail myself of this opportunity of publicly thanking the one who still is with us for the genuine sympathy and valuable assistance so generously bestowed and so universally appreciated.

Truly do you anticipate my circumstances regarding my literary productions. I did at one time intend to have had a work on hippopathology ready by the conclusion of the session; but circumstances have arisen which have so distracted my mind, that for the present I have given up the idea, which must await time for its further development.

But, gentlemen, although I have published no books, still I think I can with some satisfaction look upon you, my students, as living books, "to be read and known of all men;" and I sincerely hope you may be enabled to prosecute with success the noble calling which I hope I have in some measure succeeded in teaching you, that your pages may never turn dim, or your principles and precepts be forgotten or disregarded.

Allow me again to thank you for your great kindness, for this expression of your gratitude is valuable to me in many ways. It

seems to me like the oasis in the desert to the parched and weary traveller to speed him on his course rejoicing.

A vote of thanks to the Lord Provost and Councillors was enthusiastically passed, when the meeting terminated.

COLEMAN PRIZE.

On the receipt of the report of the Professors of the Royal Veterinary College, relative to the selected essays for the "Coleman Prize," the Governors, at their meeting on July 10th, proceeded to open the sealed envelopes bearing corresponding mottoes, when it was found that the silver medal had been won by Mr. H. G. Lepper; bronze medal, Mr. John Kenney; first certificate, Mr. R. C. Queripel; second certificate, Samuel Lomas.

Veterinary Jurisprudence.

BALLYMENA PETTY SESSIONS.

Monday, 20th June.

Magistrates present:—John Young, A. C. Montgomery, Thomas Casement, and Alexander Davison, Esqrs.

CRUELTY TO ANIMALS. DISHORNING.

Messrs. James and George Graham, of Ballymena, appeared on the prosecution of the Constabulary, and were charged with having inflicted, or directed and authorised the infliction of torture upon certain cattle, their property, at Craigywarren, on the 24th of May last. Mr. O'Rorke conducted the case on behalf of the Belfast Society for the Prevention of Cruelty to Animals, and Mr. Caruth appeared for the defence.

Mr. O'Rorke stated the case. On the 24th of May the defendants had sanctioned the infliction of horrible torture upon twenty-eight head of horned cattle—bullocks, heifers, and cows—their own property, at Craigywarren. The horns of these unfortunate brutes had been sawn off close to the skull; and their roars under the infliction of such inhuman torture had been heard for miles over the country. Evidence would be produced to show that the inside of a horn is composed of nerves and blood-vessels in close connection with the brain, and of a character so sensitive that the removal of the horny covering was as painful to the brute as the stripping of a nail from the human finger. The horns had been sawn off as

close to the skull as to cause protrusion of the brain; and it was impossible to conceive a more gross or deliberate violation of the statute for Prevention of Cruelty to Dumb Animals—13 and 14 Vic., chap. 92. The prosecution had been brought under the 2nd section of the Act [produced and read], and the penalty was £5 for every offence. In this case twenty-eight separate offences had been committed, and hence the total liability of the defendants amounted to £140. The cattle would probably have been more profitable to the owners with the horns off. He understood they were of a particular class, intended for sale in a certain English market, where animals with horns were objected to; but no motive of private or personal advantage could warrant the infliction of such torture. The defendants were merchants of long standing, large property, and occupying a most respectable position in Ballymena; but they should be more cautious in their proceedings, and the present prosecution would be a warning to other cattle-owners who were following the same inhuman practice.

Mr. Caruth said he would narrow the ground of controversy in this case, and save the time of the Court, by admitting that the horns had been cut off with the knowledge and under the authority of his clients. Hence the only question which the bench had to consider would be whether the act complained of was or was not an infringement of law, within the meaning of the statute.

Mr. O'Rorke accepted that issue; and said he would not insult the intellect of even the most stolid juror by supposing it possible he could come to any other conclusion than that there had been a gross violation of the Act.

Sub-Constable Little examined—I visited the defendants' farm at Craigywarren on the 24th of May last. In one of the fields I found twenty-seven head of cattle—bullocks and heifers, and in another field a cow. The horns of all these cattle had been cut off close to the skull—so close that in some cases a part of the skull had been taken with them, and I could almost see through their heads. Blood and matter of some kind were trickling from the wounds. I took it to be the brains of the cattle that I saw protruding. With a few exceptions the animals were not feeding, and they all appeared to be suffering.

James M'Kenna examined—I am a veterinary surgeon, and Honorary Inspector to the Belfast Society for the Prevention of Cruelty to Animals. I heard the testimony given by the last witness. The interior of a horn is composed of blood-vessels, nerves, and could not be cut near the root without excruciating agony to the animal. No part of a horn, unless an inch or two of the top, could be taken away without causing pain. If cut close to the skull, a portion of the brain might protrude without resulting in death.

Cross-examined—If horns were taken off incautiously—say with a blunt saw—injury to the skull might ensue. I have heard of the practice of "horning" cattle, but I never saw it done, and I would not do such a thing myself; the practice is not recognised by the

profession. The castration of animals is necessary in some cases. It tames them, tends to the suppression of viciousness, and makes them more useful and profitable to man. It is a very painful operation—quite as painful as the horning of cattle. Castration on scientific principles is practised in the veterinary profession.

To the Bench—The castration of horses is necessary to public safety, and makes the animal more useful and manageable. I do not think that taking off horns would improve cattle.

Mr. Caruth admitted that all animals should be treated with kindness and humanity. But there were many nice considerations as to the legal meaning of "cruelty," and many differences of opinion as to what constituted a punishable offence under the statute. It had been admitted that the practice of castration was as painful as that of horning; and although the former had been sanctioned by people in high places, and reduced to a science, yet it was scientific cruelty after all, and tortured the animal quite as much as the removal of a horn. If horning was a crime on account of its cruelty, the practice of castration was just as bad. The object of the practice in each case—and the defence alleged in each case—is to make the animal more profitable to the owner; and the defendants had sanctioned the horning of their cattle simply with view to make them a more profitable stock. If horning was an offence under the statute, the practice of castration, however scientifically performed, was an offence as great, and every argument in defence of the one practice was applicable to the other. He would not argue that horning was not an act of cruelty, but he would maintain that the other practice was equally so; and although he felt that his clients must be convicted, he would, under the circumstances, ask the bench to impose a nominal penalty, and the smallest coin in the realm would be sufficient.

Mr. Montgomery—There is one description of animal with regard to which castration, however painful, may be defended as an act of necessity.

Mr. Young (to *Mr. Caruth*)—Do you defend horning on the ground of its necessity, or public convenience?

Mr. Caruth—No; it is a question of profit; the additional value of the cattle to the owner—just as in the case of the castration of rams, and various other painful practices sanctioned everywhere. The horns were not cut off wantonly, or for the wilful infliction of pain, but simply with intent to make the cattle more valuable; and that is my argument for a mitigation of the penalty. If my clients are to be punished for attention to such interests in this case, it is to be hoped that the Belfast Society will direct their attention to other cases equally cruel, without any better excuse for them.

Mr. O'Rorke—The bench have been asked to impose a fine payable with the smallest coin of the realm, which they are told will have the effect of putting a stop to such offences. Why, it would only encourage them. Twenty-eight separate offences have been committed, and the defendants are liable to penalties amounting to £140. If I were disposed to press rigorously, I

think I could show that the removal of each horn is a separate offence within the meaning of the Act, and hence the penalties for the removal of fifty-six horns would be £280.

Mr. Caruth—Mr. O'Rorke might just as reasonably allege that every rasp of the saw caused pain, and was, therefore, a separate offence.

The hearing being concluded—

Mr. Young said—The facts of this case have been admitted, and the Court has paid due attention to all that has been said on either side of it. The practice of horning, so as to make cattle more profitable to the owner, is not uncommon in this country, and it may have been adopted unwittingly or without due consideration in this case; but, after hearing Mr. M'Kenna's testimony upon the subject, the bench cannot avoid the conclusion that it is an act of cruelty, punishable under the statute. We are of opinion, however, that a conviction in one case will be a sufficient vindication of the law; and our decision is that the defendants are to pay a fine of £5—James Graham and George Graham £2 10s. each, with costs. The public must now understand that the horning of cattle is an unlawful offence, and future cases of it will be punished with a very heavy penalty indeed.—*Ballymena Observer.*

PARLIAMENTARY INTELLIGENCE.

CATTLE DISEASES.

Mr. Gore Langton asked the Vice-President of the Council whether he had received a report from the local authority for the county of Somerset showing the number of cases of pleuro-pneumonia and foot and mouth disease which had occurred in the county of Somerset for the three months ending the 25th of June last, and whether he would have any objection to lay the report upon the table.

Mr. Neville-Grenville asked the right hon. gentleman whether he had received reports from other counties besides Somerset respecting the increase of pleuro-pneumonia and foot and mouth disease.

Mr. W. E. Forster said a report had been received from the local authority of the county of Somerset covering the period between April 3rd, 1870, and June 24th, 1870; but this report did not quite agree with the report furnished to the Privy Council by the Inspector, and until they could ascertain the cause of the discrepancy there would be no advantage in laying it upon the table of the House.

With regard to the foot and mouth disease, it had been prevalent in Somerset of late, though, perhaps, not to the same extent as it had prevailed in other parts of the country during the autumn of

last year. The outbreaks of pleuro-pneumonia in Somersetshire had been two. The number of cattle affected was reported by the inspector to be four, and by the local authority three. The number of deaths was by both parties reported to be two; but he had reason to believe that pleuro-pneumonia was not increasing in Somersetshire.

In answer to the question of the hon. member (Mr. Neville-Grenville), he had to say there were no *special* reports from other districts with regard to pleuro-pneumonia and foot and mouth disease. The Privy Council had reason to believe that pleuro-pneumonia was not to any great extent prevalent, and that the foot and mouth disease had decreased of late.

THE FOOT AND MOUTH DISEASE.

Sir H. Selwin-Ibbetson asked the Vice-President of the Council whether it was true that a cargo of sheep suffering badly from foot and mouth disease had been stopped at Thames Haven or elsewhere; what country they came from, and if any steps had been taken in consequence by the Privy Council.

Mr. W. E. Forster said that on Monday afternoon last he received a telegram stating that some sheep had been stopped by the officers of Customs on suspicion that they had the foot and mouth disease, the vessel having arrived from Tonning. Although the department had the fullest confidence in the Customs officials, it was thought better to send down one of the Privy Council inspectors to make a special report. Professor Simonds was consequently sent down, and his report entirely dispelled the idea that the animals had the foot and mouth disease. Several of the animals were lame, but their lameness was simply owing to an inflamed state of the foot induced by their having been driven long distances before being put on board the vessel.

He might add, in justification of the detention by the Customs, that although the sheep had not the foot and mouth disease, there was good reason for suspecting its existence, and while inconvenience might have resulted to the owners, it was better in such a matter to err on the safe side.

CATTLE DISEASES (IRELAND) BILL.

On the order for the third reading of this Bill,

The Earl of Airlie said he did not want to obstruct the progress of the Bill, but he thought some of its provisions required amendment. Clause 2 required that cattle brought into Ireland should be provided with hay and water. No doubt those regulations were very good; but there were no corresponding regulations in respect to cattle exported from Ireland, and, therefore, he proposed to introduce an amendment into the clause to supply that omission. Again, large powers were given by the Bill to the Lord Lieutenant to

prohibit cattle entering any Irish port from England or Scotland if he thought fit; but there was no analogous power whatever given in regard to the exportation of Irish cattle into England or Scotland. He therefore had an amendment to propose, to follow clause 5, providing that cattle should not be shipped from any Irish port without a certificate as to their sound condition from the inspector of the port. The foot-and-mouth disease had been spread in this country by the Irish cattle brought over to Liverpool, Glasgow, and other places. Unless some such amendment as he suggested were adopted, the owners of unsound or diseased cattle in Ireland would have every inducement to get rid of them by exportation to England and Scotland.

Earl SPENCER protested against the general attack made by the noble lord who spoke last on Irish cattle (a laugh). He had never seen any proof that the Irish cattle had more disease among them than any cattle moved from one part of Great Britain to another. He had no objection to the first of the noble earl's amendments, but he opposed the second one as being wholly unnecessary. It would be unjust to bind down the Irish cattle trade by the severest restrictions by Act of Parliament, especially seeing that the Lord Lieutenant and the Privy Council of Ireland had ample power to issue such regulations as in their discretion they deemed requisite. That Bill put the Irish cattle trade in precisely the same position as the English trade was placed by the Consolidated Act passed last year, and it would provide proper safeguards against cattle disease both in Ireland and in Great Britain.

The Duke of RICHMOND maintained that there was disease among the cattle of Ireland now, and the introduction of that very Bill itself was some evidence of this fact. He ventured also to assert that Irish cattle had brought disease into Scotland. The Lord Lieutenant had said that the Irish Government at present had ample power by order in Council to adopt all the restrictions which the noble earl (of Airlie) wished to place upon the exportation of Irish cattle, but if that were so, why was that power not exercised? [Earl SPENCER said that he had stated that if this Bill passed they would have that power.] The amendment of the noble earl opposite would not put Ireland in any worse position. If the Irish cattle were sound there would be no difficulty in getting a certificate; if they were unsound it would be right, in the interest of this country and of Scotland, that there should be some such proviso as that recommended by the noble earl. If his noble friend divided he would vote with him.

After a few words from Lord TALBOT DE MALAHIDE,

Lord DUNSANY hoped the House would not support the amendment. The interests of the manufacturing population of Lancashire and West Yorkshire were quite as much concerned as Irish interests, and if the people of those districts were able now to buy meat at a reasonable price, it was owing to this,—that there was some grass growing in Ireland, while there was none in this country. Pretty nearly every Monday's market at Liverpool was stocked by three or

four thousand head of Irish cattle, and three or four times that number of sheep, and did the noble earl mean that for every one of these 4,000 cattle and 16,000 sheep a certificate must be obtained not only that they were sound, but that for a period of three months preceding they had not been in the way of any contagious disease? No veterinary surgeon could certify on view of the animal that it had not been for three months in the way of contagion.

The Bill was then read a third time and passed, the amendment not having been passed.—*Times.*

MR. C. S. READ, M.P., AND THE VETERINARY DEPARTMENT OF THE PRIVY COUNCIL.

To the Editors of the 'Veterinarian.'

DEAR SIR,—You will oblige me by inserting the following letter, which I have received from Mr. C. S. Read, M.P.

Yours very faithfully,

W. SMITH, M.R.C.V.S.

Pottergate Street, Norwich, July 20.

MY DEAR SIR,—I was very surprised to hear from you some veterinary surgeons considered that in the remarks I made upon the cost of the Veterinary Department of the Privy Council Office, I made some disparaging observations upon the *Veterinary Profession.*

I did no such thing. On the contrary, classing Professors Simonds and Brown with *Mr. Simon,* I said that the country derived such benefits from their services that they ought to be well paid, and no one could contend their salaries were extravagant. But I did say that the Secretary's pay was excessive, and that the expense of the department was out of all proportion to the good it produced. I contended that the department inflicted unnecessary returns and orders upon our country inspectors, thereby causing extra trouble and expense; and the worst of all was that when the returns were sent to the Veterinary Department, they were so badly tabulated and kept, that no report that I had moved for had been furnished in a complete state.

I thank you for calling my attention to this misconception, and remain, dear Sir,

Yours faithfully,

CLARE SEWELL READ.

Mr. Smith, V.S.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

To the Editors of the 'Veterinarian.'

Gentlemen,—Permit me to avail myself of the circulation of the *Veterinarian*, to offer a few words in explanation of an apparent omission on my part, which, I am afraid, has produced some misconception.

It has come to my knowledge that certain members of the profession have felt somewhat slighted in not having received circulars notifying the preliminary meeting of the above-named Society, and I crave the opportunity to state that I addressed and posted myself 200 circulars, the major portion of which were sent to the professors at the Royal Veterinary College, and members *only* of the Royal College of Veterinary Surgeons residing in Middlesex, Kent, and Surrey, as obtained from the Register issued from Red Lion Square. In order to guard against miscarriage or non-delivery from insufficient address, change of residence, &c., an advertisement was inserted on the cover of your last issue, which I thought would reach the members of the profession in the place of circulars, and be accepted as a sufficient invitation. In some instances this had the desired effect; in others it appears to have failed, and I have to assure my many friends in the body, that wherever circulars have failed to reach those to whom they were addressed, the omission lies with the Post Office authorities and officials; and the statement will have additional weight when I mention the fact that, within a very recent period, several letters and printer's proofs have yet not arrived at their destination, and in one case upwards of one hundred and fifty pages from a work in manuscript, were lost for upwards of three weeks, but at length turned up after lengthy correspondence and much anxiety.

I remain, &c.,

George Armatage,

Hon. Sec., pro tem.

OBITUARY.

We have to record the death of Mr. R. Girling, M.R.C.V.S., Ipswich. Mr. Girling's diploma bears date Nov. 25th, 1830.

Also of Mr. R. Elkington, M.R.C.V.S., Coventry. Mr. Elkington's diploma bears date Dec. 19th, 1860.

THE

VETERINARIAN.

VOL. XLIII. No. 513. SEPTEMBER, 1870. Fourth Series. No. 189.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from p.* 606.)

Vital Appendages of the Foot.—We have now somewhat hurriedly, and, perhaps, in a manner superficially, examined the horse's foot, so far as the bones, ligaments, tendons, vessels, and nerves are concerned. But in addition to these, it must be noted that there are textures and structures—'tegumentary' as they have been termed—whose presence cannot be overlooked in the consideration of the anatomy and physiology of the organ, and which possess the greatest interest for, as they are held in the highest importance by, those who are chiefly concerned in its maintenance in health; nor are they devoid of attractions for those who may only be studying the foot in order to discover the why and wherefore of its perfect adaptability to the various demands imposed upon it.

Though in reality these parts constitute an essential portion of the foot, yet to facilitate their examination and avoid confusion, I have ventured to retain for them the designation of "vital appendages" of that organ, constituting as they do, to some extent, a feature peculiar to solipeds.

As these appendages have an intimate connection with the relations subsisting between the foot and the hoof, and as the welfare of the latter—and, indirectly, that of the horse itself—is closely allied to a proper knowledge of their situation, structure, and *rôle*, we will devote a little more attention

to their consideration than we have done to the parts just enumerated.

Of these appendages, the first we will notice is the skin enveloping the lower part of the limb.

Intimately associated with the foot, not only with regard to its position, sensitiveness, and vascularity, but also in relation to its secretory faculties, this membrane immediately above the hoof, and also its continuation within it, where it covers the exterior of the coffin bone, requires particular notice, in order that we may the more fully and readily comprehend the large share allotted to it in the functions of the foot, and in the elaboration and integrity of its horny envelope—the hoof. Its structure, until it approaches the latter, is but little, if at all, different from that which it presents in other parts of the body. It is the same firm, resisting, more or less thin and elastic, hair-covered, and, as a rule, always dark-coloured membrane, that protects, while it permits the free movement of the important and sensitive organs beneath. It offers for study two layers, the *derm* (also named the *cutis*, or *cutis vera*), and the *epiderm* (likewise designated the *cuticle* or *scarf-skin*). The first, as is well known, is the innermost, living, sentient, or fibrous portion of the skin, and forms the base of the epiderm. It is composed of a fibro-elastic tissue, the fibres interlacing more or less closely as they are superficial or deep-seated, and allowing the lodgment of blood-vessels, nerves, glands, fat, &c., in their meshes. The predominance of white or inelastic over the yellow or elastic fibres, depends upon the requirements of the structures covered by the skin. Where elasticity is necessary, as in the vicinity of joints, the yellow elastic fibres are most numerous; but where fixity is needed, the white inelastic preponderate. When boiled, this layer is converted into gelatine, and tannin transforms it into the insoluble, compact, and supple material called leather; when exposed to maceration, it putrefies. Its surface is covered with what are called "processes," "tufts," or "papillæ," composed of blood-vessels and nerves; these are usually of a prominent conical or thread-like shape, and in greater or less profusion, according to circumstances. The glands are those minute bodies which secrete the perspiration, and also those which generally accompany, in pairs, each hair root, or follicle, and yield that sebaceous or oily matter destined to keep the integument flexible and in a healthy condition. The roots of the hair are also lodged in this layer, where it may be said they in reality grow; lymphatic vessels are generally abundant.

The epiderm or cuticle is the outermost, insensible, and non-vital portion of the skin. It differs from that we have just noticed, besides the absence of vessels, nerves, &c., in being composed entirely of cells, arranged horizontally in irregular beds of varying thickness and density, according to the situation and necessities of the integument. The more superficial cells are very thin, small, flat, and light-coloured, and often so densely packed together as to form a horny covering; but as we pass downwards, we find them becoming more oblong, vertical, round and soft, until at length we reach those which have been last secreted from the derm, and which constitute what is sometimes known as the *rete mucosum*. The cells of this lowermost stratum of the epiderm are, in the horse, nearly always of a dark colour, owing to the presence of the pigment granules to which the tint of the skin is due; they also contain well-defined nuclei. No other structure can be perceived in this cuticle, save the shafts of hairs and the canals of the perspiratory and sebaceous glands passing through to reach the upper surface. In its chemical composition it is allied to hair and horn, consisting of "keratin," a substance intermediate between albumen and gelatine, and containing sulphur. It is the protector of the extremely delicate apparatus contained in the derm, and serves at the same time various important offices in connection with the sense of touch, the temperature of the body, and several of its secretions and excretions, and also acts as the chief agent in supporting contact with the ground and sustaining weight in a large number of animals. The outer or upper strata are being continually detached in scales or layers by wear or exposure to the weather, and replaced by those which are in process of formation by the derm. The latter is separated from the epiderm by an exceedingly fine fibrous expansion, which is apparently destitute of any definite structure (the *membrana propria*). This is of such extreme tenuity that it can only be clearly distinguished in early life. It follows the elevation and depression of the derm, forms in fact a covering to it, and acts as a medium to the epiderm for the transmission of nutrition to its cells from the layers of blood-vessels continuously extending beneath it.

From the fetlock, proceeding downwards to the hoof, the skin possesses in every respect these essential characteristics, but on a magnified scale. The derm becomes much thickened, and its texture is denser and more resisting; while its blood-vessels are largely increased, and on its surface the ultimate branches of the arteries form complicated networks. The papillæ also become greatly augmented in size, the hair folli-

cles, as well as the hairs springing from them, acquire an enormous development, particularly towards the heels in certain breeds of horses; the sebaceous glands are proportionately enlarged, and the perspiratory ones decrease. The object of this is evident enough. The lower parts of the limbs being at certain seasons, in particular climates, exposed to wet and cold, as well as the prejudicial action of certain soils, they have been protected, in addition to a thicker skin, by this close covering of long coarse hair, and larger and more numerous oil-glands whose secretion not only keeps the tegument flexible, particularly in the hollow of the heel, where there is most motion, but also provides it with an unctuous coating that repels the wet, while the long hair prevents too rapid evaporation. This thickness of the integument also serves to explain why wounds and abscesses in this region often assume such a serious character.

Such are the general features of the skin of the foot until we reach that part designated the "coronet," where the wall of the hoof originates. In order to examine the modifications to which it now becomes subjected, it is often advantageous to submit the foot, with the hoof thereon, to prolonged maceration in water, so as to be able readily to separate the latter from the structures it contains.

If this removal of the hoof has been carefully effected, the display of organization that meets the eye is truly marvellous, and one that never fails to excite a strong feeling of admiration in the comparative anatomist, no matter how frequently he may perform this operation: more particularly is this the case if the vessels of the foot have been previously injected with some fine colouring matter.

We then perceive that at the origin of the hoof wall, or where the hair ceases to grow, the skin becomes somewhat suddenly thickened to form two convex enlargements of unequal volume and convexity, extending around the space comprised between the lower end of the coronary or small pastern bone, and the upper border of the os pedis, and lying one above the other. The first and uppermost of these (fig. 12, *a*) is not markedly salient, and starts out gently from the line where the hair terminates, passing round as a light pink band in a circular manner towards the heels, its greatest width being in front; and gradually diminishes its superficies, until it attains the points or bulbs of the cartilages, where it abruptly expands to incorporate itself with the tegumentary membrane covering these and the plantar cushion. Above, as we have just remarked, it is only limited by the hair, but below it is separated throughout its extent

from the other enlargement by a somewhat deep and narrow channel or fissure (fig. 12, *b*). This part has been named the "perioplic ring," from its secreting the "periople" or

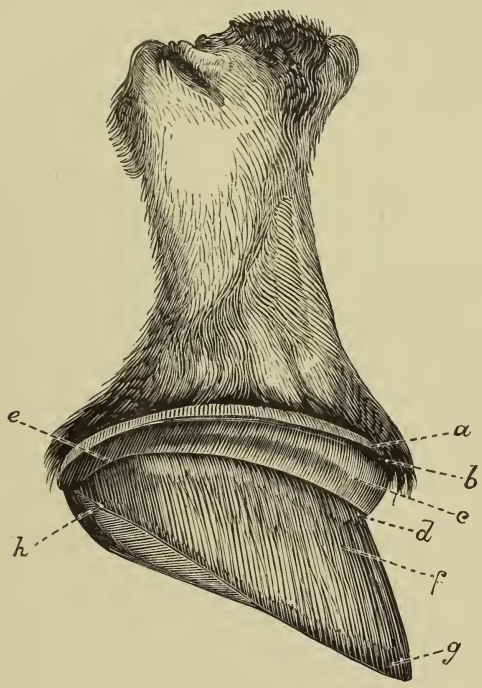


FIG. 12.—The horse's foot with the hoof removed. *a*. Perioplic ring. *b*. Perioplic or coronary fissure. *c*. Coronary cushion. *d*. White zone. *e*. Villi of the coronary cushion. *f*. Vascular laminæ. *g*. Laminæ terminating in villi. *h*. Plantar cushion covered with villi.

so-called "coronary frog-band," a horny structure that will be referred to presently, when speaking of the hoof. By suspending the foot in a glass vessel filled with water, it will be found that the surface of this ring is closely studded with the most delicate points that project like tufts of the finest silk velvet, and are scarcely visible to the naked eye. Examined with the microscope, the ring is found to be highly organized, being abundantly supplied with blood vessels, and the hair roots at its upper margin have an ample supply of sebaceous glands to keep these and the horny band proceeding from it in a pliant and elastic condition. The nature of the tufts garnishing its whole face so evenly and closely will be examined immediately.

The groove separating the two projections, and which may not improperly be designated the "perioplic" or "coronary fissure," runs parallel with these around the whole circumference of the foot, and is widest and deepest in front, becoming gradually effaced as it attains the plantar cushion, where it is seen to join its extremities on what is called the pyramidal portion of that structure. Throughout its whole length it is also covered with fine villi or tufts, and from the bottom of its groove spring the thin upper and outer margin of the hoof.

The large prominent convex mass beneath the perioplic ring (fig. 12, *c*) has received various designations, according to its functions, form, or structure. By some it has been called the "cutis-dura" from its texture; "coronary ligament" from its situation and an erroneous estimate of its structure; "coronary substance" for want of a more appropriate name, or through ignorance of its function or composition; "matrix of the hoof" from its analogy in part of its function to that portion of the human digit which secretes the nail; and "bourrelet," or ring, by the French, from its form. To prevent misconception, however, and to indicate one of its most important offices, while harmonising it in this respect with a structure already described, I have thought it most convenient to designate it by the simple and easily remembered name of "coronary cushion."

It is constituted, as already remarked, by an extraordinary thickening of the integument within the upper border of the wall of the hoof, and is nothing more or less than a highly exaggerated development of the inner layer or derm of the skin. It stands out boldly from the parts below like a kind of cornice or convex protuberance, most prominent in front, where it is so salient as to be conspicuous even to the casual observer. From this point it passes backwards from the summit of the pyramidal eminence in an oblique manner and in gradually diminishing proportions, until it gains the posterior part of the foot, or heels, where it bends acutely downwards and then forwards, in a manner corresponding with what are called the "bars" of the hoof, and again attains noticeable proportions, but only to grow attenuated within each wing of the os pedis, parallel to the space separating it from the plantar cushion. At the heels it apparently incorporates itself with the cartilaginous bulbs, and through them is allied with the plantar cushion. Above, as we have observed, it is partly isolated by a somewhat deep circular groove, the "coronary fissure;" but below it is limited by a lighter coloured band, the "coronary" or "white zone" (fig. 12, *d*),

that margins it as far as its inflexions within the sole; its upper border stands out sharp and prominently from the groove, while its lower edge subsides almost insensibly into the coronary zone.

In texture this cushion differs essentially from that of the plantar surface, being composed of a very close and firm fibrous tissue, identical with that of the derm; multitudes of arteries from various large trunks send their ramifications into its structure and over its surface, to compose a most intricate network, which is so close and interwoven as to form a complete vascular tissue on its face. The whole of its convex surface is lodged, or rather *rests*, within a corresponding concavity on the upper and inner face of the wall of the hoof. When this latter has been removed in the fresh state by an extreme degree of heat, the coronary cushion often resembles in colour the bright red of flesh, from the great quantity of blood it contains; and when it does not do so, it is owing to no lack of blood-vessels, but to the absence of blood in them, or the presence of black pigment granules diffused in its outer layer, as in the dark coloured epiderm immediately adjacent. Though most commonly of a bright red or scarlet hue, its tint somewhat depends upon that of the integument in connection with the hoof, as if this be brown or black it is then of a darker shade.

The "coronary" or "white zone" (fig. 12, *d*) appears, on a superficial inspection, to be merely a continuation of the cushion, whose lower margin it terminates. On a careful examination, however, we discover that, though constituting a portion of this elastic and secretory body, it yet presents some points which distinguish it more or less, and which must be referred to here. It begins as a very narrow band in front, between the cushion and the podophyllæ beneath, being in an ordinary sized foot less than a quarter of an inch in width. As it approaches the heels it gradually expands, and at the inflexures has attained somewhat considerable dimensions. It passes in the same direction as the cushion, and extends beyond it on the inner surface of the wings of the pedal bone. It has a slightly more prominent convexity than the cushion; its colour, more particularly where it abuts on the laminæ, is lighter than that of the cushion, though in black legged horses it is sometimes faintly flecked with dark streaks or spots.

The coronary cushion and its zone derive their most remarkable peculiarity from the presence of the vast numbers of papillæ or villosities which crowd their surface everywhere, giving it, as the foot floats in water, a filamentous appear-

ance, somewhat like the pile on the very finest velvet. These papillæ or villi during life incline downwards, and might be supposed to be merely the minute conical points seen on the surface of the derm in other parts, here enlarged in size and increased in number to serve a particular purpose.

In point of numbers they vary but little over the whole surface of the cushion, but their size differs considerably. Thus it is that, on the upper parts of the protuberance they are seldom more than one third of the length they gradually attain as they reach its lower border; and they maintain this increased development to the inflexure at the heels, on the parts bordering the sides of the plantar cushion, and do not begin to decrease to finer and shorter filaments beyond these, as has been stated. On the contrary, at the lower border of the cushion, and at the commencement of the white zone, they are largest and longest, and continue so to the bottom of the zone. There is no great regularity in their length at any one point; indeed, the greatest diversity prevails with regard to their volume, though it may be said that in a medium-sized carriage or riding horse's foot, at the central portion of the cushion, they measure from 5-16ths to 7-16ths of an inch.

The structure of these minute processes, both on the perioplic ring, the plantar cushion, and the white zone, appears to be somewhat similar to that of the papillæ of the derm, in so far as the arrangement of the blood-vessels is concerned, though they are much more interesting as microscopical objects.

In examining one of them by means of a high magnifying power, it will be found that it consists of a little bundle of exceedingly fine fibrous tissue, derived from that composing the cushion, and which, fining off towards the point, forms a long tapering body that appears to be covered, like the upper surface of the derm, by the extremely thin and translucent basement membrane that is supposed to play so important a part in the growth and nutrition of the epidermic cells of the skin.

This beautifully fine structureless membrane, which also covers the intervillous or interpapillary space, cannot usually be distinguished until the numerous horn cells and pigment granules that adhere to and cover its exterior to the very extremity of each villus (fig 13), are removed.

The interior of each villus or papilla, when they have been injected previously with some transparent coloured fluid, and examined in the microscope, is seen to be occupied in great part, and for its whole length, by tiny looped prolongations from the arteries of the cushion, which are spread out

beneath the basement membrane in the most delicate and beautiful manner. One or two thin twigs from minute ramifications near to, or on the surface of the cushion, enter

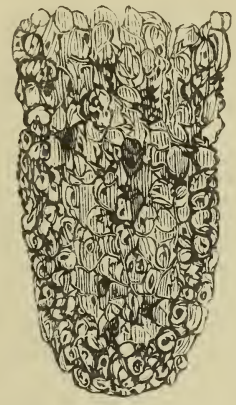


FIG. 13.—Termination of a papilla, covered with epithelial cells and masses of pigment granules. Highly magnified.

each process, and pass down its middle as gradually diminishing canals, while from their sides are given off multitudes of the finest wreathings of capillaries that inosculate with each other in all manner of convolutions around the parent vessel, and constitute a very pretty microscopical subject.

Each tuft contains veins arranged in a similar manner to the arteries, as well as a minute nervous twig.

The very small extent of surface between these processes—which we may designate the "interpapillary" or "intervillous" space—is of somewhat the same character as the papillæ themselves; that is, it is covered by basement membrane, which here also secretes horn cells, and beneath this is a perfect tissue of blood-vessels ramifying in every direction.

A peculiar feature, and one which has not yet, to my knowledge, been alluded to, may be noted here. This is the arrangement of the villi in somewhat regular perpendicular rows, more particularly on the lower half of the convex face of the cushion. These rows correspond to the laminæ which appear below; between each range of tufts the interpapillary space is slightly depressed into a very narrow fissure running directly vertical in front, or slightly forward at the sides and heels; each of these depressions responds to the commencement of a horny lamina, and it is in them, in fact, that these are secreted in health. We will have more to say on this point again, however.

The whole of this wide surface is concerned in the secretion of the wall and another portion of the hoof; but this will be referred to at another time.

OBSERVATIONS ON PARTURIENT APOPLEXY.

By J. W. Hill, M.R.C.V.S., Wolverhampton.

The practical remarks by Mr. A. H. Santy, on parturient apoplexy, in your last number, will, I trust, be added to by more than one member of the profession. The common occurrence of the malady, and its great fatality in many districts, entitle it, I think, to more than ordinary consideration; to myself it has been a subject of especial study and interest, and any new ideas advanced in connection with it I hail with pleasure.

The opinion of Mr. Santy as to the cause of so many fatal cases being suffocation, is, in numerous instances, I believe, undoubtedly correct; but is this suffocation due only to one cause—the suction of eructated food into the trachea? No. I believe that many of the animals affected with parturient apoplexy meet with their death, as Mr. Santy also remarks, in the administration of medicine (without sufficient care, or even in some cases where every precaution is taken) when in a state of coma; that the medicine so administered, intended for the stomach of the patient, passes into the trachea, and thus brings about a fatal termination of the case.

I do not think the eructation is always due to fermentation, but from inaction of the digestive system generally, as it is frequently seen when there is no accumulation of gas at all, particularly if the animal is lying on her belly with the head straight out, or when stretched out on her side. The best means I find to prevent the ingesta thus coming back, is to keep the head well up by packing with bundles of straw, and administering, if possible, either the Carbonate or Arom. Spt. Ammon. in ʒss doses, with a little water, frequently.

I think it would be scarcely practicable to open the rumen and remove the contents in this disease, as the animal, particularly in this stage, would be too exhausted to go through the operation, and even if she were not, the rapidity with which the disease runs its course, would, I think, prevent the operation being of any benefit unless done in the earlier stage, and then I should be doubtful as to the results. We may, however, puncture the rumen by a trochar with decided

benefit; but unless the accumulation and distention is very great, I prefer endeavouring to neutralize the gas by chemical agents.

With regard to internal remedies, powerful stimulants, combined at the outset with purgatives, constitute undoubtedly the great element of success in milk fever cases. There is no question, as Mr. Santy observes, about the brain being the seat of the disease; in fact, it is evident even to those unacquainted with pathology that such is the case, and that the hind quarters are also deprived of nerve force; hence the necessity for internal stimulants to overcome the first, as brandy and Ammon. Carb., and external ones the latter, as mustard and Liq. Ammon. along the course of the spine, particularly the lumbar region, succeeded by bags of hot salt continually replaced.

I have heard but little said as to any application being used to the head in this malady, independently of internal remedies; and as it contains that organ (viz. the brain) which is the chief seat of the mischief, it is a part that certainly should not be lost sight of. I always find great benefit from the application of cold water to the poll of the head, either by laying a saturated swab between the horns, and not allowing it to get hot or dry, or pouring on a continuous stream of cold water. I have also in the winter time used ice, placing it at the back of the horns, and allowing it to remain until it melts. Such cooling applications are particularly beneficial when the patient is in a semi-conscious state, and often wards off that entire coma, which is so much to be dreaded in this disease; even when the animal is comatose it subdues to a considerable extent the inflammatory action and congestion of the brain.

There is, however, a great deal yet to learn in connection with this, at present, fatal disease; and I trust the pages of the *Veterinarian* will continue to reveal to its readers much of the valuable information so much desired and required in reference to the common, and, if I may so express it, everyday maladies. By an interchange of opinion we gain knowledge, and no better medium can we have for so doing than the pages of this valuable journal.

FATAL CASES OF POISONING IN A HORSE AND MARE FROM EATING YEW.

By the Same.

On August 6th I was summoned to make a *post-mortem* examination of a horse and mare that had suddenly that day died. The horse was seen grazing in front of the house, and was apparently in good health, at 1 p.m.; at 2.30 p.m. he was found dead. The mare shortly afterwards was noticed to reel and fall, rise again, plunge, and drop dead.

From this short history I was led at once to believe they had been poisened by some plant; a conviction which was very soon verified. Upon opening the stomach of the horse, I discovered about two handfuls of yew, scarcely masticated, as if it had been partaken of greedily, though in so small a quantity; the remainder of the ingesta being recently eaten hay.

The same condition appeared in the mare, with the exception that she had eaten a greater quantity of yew, and had been more deliberate over the meal, having thoroughly masticated it. Slight patches of inflammation were noticed along the intestines of both animals, but more particularly in the latter. Owing to the lateness of the hour I was unable to examine the brain, which I have no doubt I should have found congested, as were the lungs and liver.

I account for the suddenness of death from the fact of the animals having been turned out for the first time that day, and there being a scarcity of herbage in the field, they had found their way to a large yew tree that stood in one corner, and there partaken of the food which had given rise to such fatal results. The traces of their footsteps were found around the tree, and the marks of their teeth on most of the lowermost branches.

My attention was then directed to a pony that had been turned out with them; and he, I found, like the others, had been tempted to indulge, though to a less extent. The pulse was small and feeble; the eyes had a vacant expression, with dilatation of the pupil; and the breathing heavy and difficult. Being eleven miles from home, and not expecting a third case, I had nothing in the shape of medicine with me, I therefore immediately gave half a pint of oil, all I could obtain, and applied mustard and hot vinegar over the abdomen. One hour afterwards half a pint of brandy in a little warm water was administered; the pulse then being a little stronger, though the same expression still remained in the

eyes. I left instructions to give the pony two wineglassfuls of brandy in one hour and a half, and to be repeated again with the same interval if necessary, and a little sloppy mash or gruel to be allowed if he would take it.

August 7th.—I again visited my patient. Pulse stronger; eyes brighter, and natural in expression; breathing better, but still heavy; had dunged twice, but not urinated; and had eaten a little mash. Administered ʒv Aloes, in solution, and left some Spt. Æth. Nit., and Liq. Ammon. Acet., to be given at two hours interval.

8th.—He was seen by the assistant, who found him a little off his food, but convalescent. A little tonic medicine was left, with instructions to keep him from dry and hard food for a few days.

SUDDEN DEATH OF TWO HORSES. SUSPECTED POISONING OF THREE BY ALIMENTARY MATTER.

By W. P. Toll, M.R.C.V.S., Rolleston, Burton-on Trent.

The history of the following cases is necessarily very brief. The subjects were three fine cart-horses, aged respectively three, six, and eight years. With a view to your readers understanding the particulars more easily, I will speak of the cases as Nos. 1, 2, and 3.

No. 1 was a mare, eight years old; No. 2 a horse, six years old, and No. 3 a horse, three years old; the property of Mr. John Holbrook, farmer, in this place. The horses had of late had only light but regular work. Upon being brought to the stable early in the afternoon of Friday, July 29th, they were fed as usual with green food, but had, in addition, about half a strike of brewer's grains, with a small quantity of oil-cake and some rice-meal, which had been given to a cow, but not eaten by her. About five o'clock on the same afternoon the horses were taken, as usual, to the field to graze, when they appeared in their ordinary health and spirits.

On the carter going to the field to fetch them up on the following morning, between five and six o'clock, he found them all ill, and showing great abdominal pain. They had evidently been in pain for many hours, as they were much bruised by rolling and knocking about. Nos. 1 and 2 were tympanitic, the bowels being much distended. No. 3 was

showing more pain than the others, but the belly was not so much swollen. They were brought to the stable, and my attention was immediately called to them.

Symptoms of No. 1.—Great uneasiness; moving about the box, but not lying down; breathing short and irregular; pulse feeble, irregular, and about 60 per minute; conjunctiva and nasal membranes injected; mouth hot and dry; countenance anxious.

No. 2.—With the exception that this animal was not so much distressed, nor his countenance so anxious, the symptoms were so nearly like those of No. 1 as to render a special description of them unnecessary.

No. 3.—In this animal the abdomen was not so much distended, but the griping pains were more intense than in either of the other animals. The pulse was 52, feeble, and irregular.

An antispasmodic draught, consisting of Sp. Æther. Nit. Sp. Ammon. Aromat., and Tr. Opii, was at once given to each animal in a little water. An examination *per rectum* was made in each case, but no fæces were found. An injection of warm soapy water was, however, employed. As these means afforded only temporary relief, in two hours I repeated the draught, adding to it Aloes Bbds. ʒvj in solution. Nos. 2 and 3 were somewhat relieved for a time, but not so No. 1. Shortly after the exhibition of the medicine, she passed a great deal of gaseous matter both by the mouth and nostrils. This was presently followed by the ejection of semifluid ingesta from the stomach. The patient continued to get rapidly worse, and in about three hours from this time she fell down and died almost without a struggle. It was suggested that a second opinion should be had, and consequently Mr. George Statham, veterinary surgeon, Sudbury, was called in.

No. 2.—This horse remained tolerably quiet, and did not show much uneasiness from about eleven till near five o'clock, when he also became worse, and presented nearly the same symptoms as No. 1. He died in the same manner as No. 1, soon after nine o'clock at night.

On Mr. Statham's arrival, about seven o'clock, a stimulant was given to No. 2, in the form of a ball, and a strong liniment was also applied to the sides and abdomen, but neither of these means afforded any relief.

No. 3 continued to show sharp pains at short intervals during the day, but was somewhat better towards the evening. The pulse had sunk to 45, was feeble, but more regular. The animal was dull and drowsy, but seemed free from

abdominal pain. He has since been slowly improving, but requires great care and watching. The bowels responded to the medicine, but not freely.

A *post-mortem* examination of No. 1 was made by Mr. Statham and myself directly after death. The bowels were found to be distended with gas. All the fæcal matter was pultaceous. A few traces of inflammation were met with on the surface of the intestines. The stomach was gorged with well masticated food. Many patches of inflammation existed on its mucous coat.

On the following morning we made a *post-mortem* examination of No. 2. In this animal more inflammation was found, both in the intestines and the stomach. This organ also was very much distended with food.

On learning that the horses had all partaken of brewer's grains over night, I was of opinion they might have been sour, and when mixed with other vegetable matter in the stomach, had set up fermentative action; hence the generation of gas and the cause of illness, but upon examination the appearances did not seem to prove this theory to be correct. No plants or vegetable matter were found in the pasture which were likely to have caused poisoning; but it is pretty evident that the cause of illness and death, be it what it may, was the same in all the cases.

No suspicion is entertained of anything having been given maliciously.

The grains had been on the premises about a month, and both the pigs and cows had been fed regularly with them, without any ill effect being produced. The horses, however, had not had any of them before this time.

[We learn from Professor Tuson, to whom the above communication was originally sent, and also the stomach with its contents of No. 2 patient, that his analysis failed to show the presence either of mineral or vegetable poison. The history of the cases distinctly points to the presence of deleterious matter in the alimentary canal, and no reasonable doubt can be entertained that the whole of the mischief resulted from that cause. The sour grains when mixed with fresh grass and other vegetable matters would doubtless produce tympanitis, but still it does not appear that death resulted from asphyxia or from local inflammatory action. It is not unlikely that the absorption of noxious materials into the circulation had much to do with the fatal consequences.]

STRANGULATION OF THE INTESTINES OF THE HORSE.

By James Macer, M.R.C.V.S., Somersham, Hants.

On Monday evening, July 25th, about 6 o'clock, I was summoned to attend a bay cob gelding, supposed to be suffering from spasmodic colic. My partner, Mr. Hill, attended, and found the case as follows:—The animal had been driven through this town to a neighbouring fair, and was first noticed to be unwell about 10 o'clock in the morning. Some time afterwards a farrier was called in, who gave him *a drink*, and afterwards some brandy; the animal was then led towards home, but could get no farther than our place. Mr. Hill found the pulse quick and wiry; ears, extremities, and surface of body cold; breathing greatly accelerated; the visible mucous membrane congested; and the animal suffering intense pain *without any intervals of ease*. From what he saw he concluded that he had a case of strangulation of the intestines to deal with, and at once told the man so; also intimating that the case was a hopeless one; but as its owner desired him to do something for it, he administered Tinc. Hyoscyamus f. ʒij, Tinc. Aconite f. ɱxv, in Aqua, and applied counter-irritants to the abdomen.

I saw the animal, in conjunction with Mr. Hill, at 8 p.m., when the symptoms had increased in severity. We again administered a powerful sedative, and ordered hot-water fomentations to be constantly applied to his abdomen. At 10 p.m. we found our patient much the same, and backraked him and gave an enema, and again stimulated the abdomen and gave Gum Opii ʒj in solution every two hours; but in spite of our treatment he succumbed shortly after 4 o'clock the following morning. Some time prior to death, knowing the case would terminate fatally, I experimentally performed parenthesis abdominis to relieve the tympany, which greatly eased the animal.

At 9 a.m. we, in company with Mr. Johnson, a surgeon of this town, made a *post-mortem* examination of the body, which revealed the following state of things:—The lungs showed traces of old disease, heart healthy; on examining the abdominal viscera we found throughout the intestinal tube an inflamed condition of the tissues; but our chief attention was called to the small intestines, which were in one mass of knots, and readily accounted for death; the stomach was filled with undigested beans, chaff, &c., which I consider to be the

primary cause of the disease. The animal was driven on a full stomach, fermentation was set up, the body became tympanitic, colicy pains ensued, and during the animal's struggles the bowels thus became entangled.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 618.)

Flowering Plants.

We have now progressed towards those more highly organised plants which are distinguished by the possession of separate parts called flowers, in which, besides those metamorphosed leaves called *floral envelopes,* we meet with still more and greater departures from the leaf-type in their *sexual organs.*

But besides this, a still more remarkable progression may be observed in the seeds, which instead of being simply spores are themselves highly organised structures, many of these indeed consisting of a well-formed bud, the *plumule;* the commencement of the root, the *radicle.* These are enveloped in a more or less thickened leaf or leaves, *cotyledons;* and the whole wrapt up in its own peculiar skin or covering, *testa.*

These seeds again are invested, enclosed, or embedded in a capsular or some other covering, the whole forming a more or less complicated fruit. Not only then in flowering plants have we to deal with hosts of vegetable productions all highly organised, but also we shall find that their different parts have often distinctive, dietetic, or medicinal qualities, as thus the seeds of the cereal grasses are saved as "corn," while the herbage is used for divers purposes. The tuber of the potato is esculent, whilst the stems furnish a narcotic poison known as *solanine.* In some plants the roots, in others the stems, others again the bark, and in many the fruits are the useful products; and of these latter, in some the seeds are rejected, while the pulp is partaken of, whilst again in not a few the seeds only are of any utility.

Truly then in flowering plants we have a most interesting and various assemblage of vegetable forms whose cell modifications, however endless they may be, are all reduceable to simple elements.

We have already pointed to the classes into which flowering plants have been divided, it will, therefore, be well in the present article to direct attention to some of the more important plants in the different divisions. Leaving out, therefore, Class III, Rhizogens, as not containing any economic species, we proceed to notice Class IV, Endogens.

In endogens, as the name implies, we have plants whose woody stems have their newest parts in the centre, as distinguished from exogens, whose newest wood forms a concentric layer outside the previously-formed layers.

The cotyledon is a single piece, *e. g.* a wheat grain, and not in two pieces as in the pea and bean. Hence, then, by some this class has been termed mono-*cotyledonous* = endogen, as contrasted with dicotyledonous = exogen.

The leaves are parallel-veined and persistent, that is, are not liable to that phenomenon known as the fall of the leaf—separation of the leaf from the stem by a natural division; hence, then, in exogens the leaf which is net-veined is deciduous.

This class of endogens is a very large one, and one too largely distributed over the different quarters of the globe. Professor Lindley has classed it under eleven alliances, which we epitomise as under:

Class IV, Endogens.

* Flowers glumaceous (that is to say, composed of bracts not collected in true whorls, but consisting of imbricated colourless or herbaceous scales).

Glumales.

** Flowers petaloid, or furnished with a true calyx or corolla, or with both, or absolutely naked; male or female, or sexes in different flowers.

Arales.
Palmales.
Hydrales.

*** Flowers furnished with a true calyx and corolla adherent to the ovary; male and female flowers together.

Narcissales.
Anomales.
Orchidales.

**** Flowers furnished with a true calyx and corolla, free from the ovary, male and female together, sometimes male or female, or separate.

Xyridales.
Juncales.
Liliales.
Alismales.

Alliance VII. GLUMALES. *Glumaceous Endogens.*

This is not only the largest but one of the most important of the divisions of vegetable life, for, as Professor Lindley tells us in his 'Vegetable Kingdom,' "The great mass of herbage known by the names of sedges and grasses, constitutes perhaps a twelfth part of the described species of flowering plants, and at least nine-tenths of the number of individuals composing the vegetation of the world: for it is the chief source of that verdure which covers the earth of northern countries with a gay carpet during the months of winter."

This carpet, it should be remembered, is not merely of interest as a varied pile to beautify the surface of our fields, or as affording an agreeable foothold, but each species is either good or useless as food, while at the same time different species indicate a fertile or infertile condition of soil.

Taking for example the two great divisions, *grasses* and *sedges*. The first for the most part affects our meadows and pastures, while the latter is a denizen of the bog or water course.

The one is replete with nutritious pasture plants, while the other consists of species having a very low nutritive value indeed.

But again, if we wish to estimate the value of the grasses we must not forget that several species, in virtue of their large seeds, are grown principally for their grain, facts which will impel us to review them in several groups.

1. *Grasses* which produce grain.
2. *Grasses* with succulent and nutritious herbage.
3. *Grasses* with harsh coarse herbage innutritious, and thus approximating to
4. *Sedges*. Grass-like herbs, but wholly devoid of value as grain or fodder plants.

Both grasses and sedges, though without highly coloured flowers, have these with very distinctive parts, possessing both stamens and pistils of very distinct structure. In grasses the floral envelopes consist of two sets, sometimes called *pales*, hence then the outer pair, calyx, is called the outer pale; the inner pair, corolla, the inner pale.

Each of these usually consists of two valves, one situate outer and lower as regards the other, thus taking the order of growth—namely, alternate—as in the true leaves of grasses.

These parts we have named calyx and corolla, sometimes glumes, in obedience to custom and for the sake of con-

venience, but we are aware of some minute scales occasionally existing at the base of the seeds, which have been referred to floral envelopes, while the pales have been considered as bracts, but without entering into a discussion of the different morphological questions which arise in the study of grasses, we would prefer to discuss some of the more practical facts connected with the properties and their produce of the many species, both wild and cultivated, which form the corn and fodder crops of this country, the discussion of which we must reserve for our next paper.

OUR JOURNAL: STRAY THOUGHTS ON OBSERVERS AND OBSERVATIONS, CONTRIBUTORS AND CONTRIBUTIONS.

By "An Observer."

It is be deplored that too many of our professional brethren neglect to make notes, even of the roughest and briefest character, of cases that are presented to their notice. We need a mass of information in matters of detail. With all our progress we are very much in the dark respecting the causes of many diseases, and we have to deplore the existence of much apathy in those who have abundant opportunities to fill the void which exists in our literature. Our friends in active practice have it in their power to become useful agents in building up a scientific profession. The materials are entirely within their hands, but too many excuse themselves on the plea of want of time; others will not come before the public under a belief that it savours of the theoretical to be guilty of writing and recording thoughts and observations. A brief record of details of observations made during the rise, progress, and decline of disease ought to be an integral part of the veterinary surgeon's duty.

We have heard individuals boast that they had never published anything. To "rush into print" was declared to be all very well for young men who desire notice, but beneath the attention of established authorities. As a scientific education becomes more strenuously insisted upon, we may hope for a better system of working, closer and keener observation, and a more sustained record of facts in our veterinary periodicals, which must always be just what the members of the profession choose to make them. We frequently hear

freely given opinions as to the manner in which a journal should be conducted, and we have to listen to criticism on the want of accurate details in pathology, surgery, &c., but we always find those who are ready to express their opinion the slowest in assisting to make their representative journal what it should be by the exercise of the powers which they possess.

Valuable as many of the roughest and briefest notes would be, it is nevertheless to be desired that all essential points should be touched upon, many records are exceedingly faulty in this respect. It is easy to dress up a description and draw speculative conclusions, but it would be far easier to give simple facts in half the space, and leave the reader to draw his own conclusions for future warning or guidance. Take, for instance, the various statements made in reference to the circulation. The pulse is described as numbering 80 or 90, and there the description ends. Another account says it was "quick," doubtless confounding that term with "rapid," or "frequent." Again, another says it was "slow," but as to the character of the pulse we are left to conjecture.

A worthy practitioner, but of an old school, on seeing a case of extreme abdominal irritation, in which the pulse was frequent, very small and weak, in fact "running down," described the disease as "violent enteritis." After death the abdominal organs were found to be large, tympanitic and black, by reason of congestion and extravasation resulting from pressure on the portal and other veins which should convey the blood to the heart. There was no thickening, no effusion of lymph, but our friend nevertheless reiterated, "it is a case of inflammation." When another almost exactly similar comes beneath his notice, and the animal recovers, we shall hear of his having "cured enteritis." There are many analagous instances of defective observation. The so-called "dropping after calving," loin-fallen, milk fever, the drop, &c., &c., as it is known generally, is another forcible example. In cattle-breeding districts, practitioners frequently attend these cases; in one locality we have heard of a most unprecedented series of cures being made, and forthwith lost no time in making close inquiries. The practitioner in a certain instance, no way chary of his information, allowed us to visit some cases and afforded all particulars required, but we discovered his nosology included parturient apoplexy, metro-peritonitis, and the ordinary nervous debility, or loin-fallen as one affection. Some died he admitted, but many recovered. "When the brain keeps all right," he said, "the cow soon gets well."

Again, strangles in horses, an essayist recently said, "this disease is considered by some to be not contagious, but for my part, I think it is." A number of facts given by an experimenter had been quoted by him, but against them only thoughts were advanced, and the judgment was declared final, although by *ipse dixit*. Young inexperienced men, making a start in life, and hearing such statements—it may be from the mouth of the practitioner with whom they are articled—accept and swear by them ever afterwards.

On the subject of contagious maladies our opinions are not at all in unison. The writer was called a short time ago by a large agriculturist to pronounce upon the nature of disease among a valuable herd of cattle. The owner had been informed he had to deal with epizoötic pleuro-pneumonia and was much alarmed. Four affected animals were put under treatment and recovered without the disease spreading any farther, or the use of disinfectants of any kind. In an action for damages sustained by a farmer, it was said, by the conveyance of contagion from an adjoining farm, a witness gave the particulars of cases of sporadic pleuro-pneumonia, conscientiously believing he had treated the contagious form; and three others stated in the witness box that in their belief contagion could remain dormant for three months and even longer, and preserve all its fatal properties, but when asked by counsel could give no proof in evidence. Many cases of a catarrhal nature were condemned on farms during the prevalence of cattle plague as *the* disease itself; yet the malady did not spread beyond the affected single animal in a herd.

In our opinions on the questions of soundness, we are very much at variance; one statement is made, we believe earnestly and conscientiously, and the practitioner following swears to the exact contrary. Can it be possible that both are right? Is not such a result inevitable upon defective observation in some point or other, and probably a desire or determination to carry a point by the weight of opinion merely? As two opposite states cannot exist at the same time, we may conclude one of the opinions is decidedly wrong, and when given under some circumstances that we could name, we should have no difficulty in being positive upon the matter.

These remarks are prompted by no cynical spirit, but with a desire to point out errors which can be discovered and avoided. As we have to deplore the paucity of writers, we have also to regret the fewness of close observers; and this may be a fault of education, in which the student has had too little of a thorough practical training among animals

under shrewd and clever men, now hoary and gradually passing from among us, whose places we shall find remaining empty long. In the former volumes of the *Veterinarian* there are articles and records of cases, epitomes of facts, in themselves of the utmost value, evincing the most stable judgment and acumen on the part of the writers. They may be referred to as reliable data for guidance in the emergencies of to-day, and the more we refer to them the more we are convinced that our previous writers were pioneers in a work which demanded deep philosophical research, profound reasoning, and closest observation. Their labours are before us, the results are evident in success which they obtained amid severe conflict of opinion and keenest trial. The conditions are very inviting, the path along which our predecessors travelled to eminence is open to us; the same journal which records their matured thoughts may become the vehicle to convey the results of our more advanced observations to posterity, for our own sakes we should not let the opportunity pass unaccepted. You may, Messrs. Editors, with propriety tell "An Observer" that he had better do as he advises others—record his cases and facts, with greater regularity; the advice would be well received, and doubtless have the desired effect.

If our veterinary journals do not represent the opinions of the profession, and the progress of science, the conclusion is that we have no opinions, and we make no progress, for, most assuredly if we submit our ideas to the test of public criticism, we shall take the right method to ascertain their intrinsic value.

Pathological Contributions.

CATTLE PLAGUE.

Reports of the prevalence of the plague on the Continent are more favorable. Hungary continues free. The malady, however, still exists in Transylvania, and in some districts in Poland.

SHEEP-POX

This disease, which was reported last month to exist at Demmin in Stettin, has extended to three other neighbouring districts, but we have not heard of any serious mortality. Sheep-scab also continues to extend in the neighbourhood of Stettin. In our own country it maintains its normal rate of progress. Recent inquiries tend to show that the disease, like foot-and-mouth complaint, is taken very much as a matter of course by stock-owners, who make but slight attempts to get rid of it.

PLEURO-PNEUMONIA.

Since our last report there has been a gradual diminution in the number of infected counties, and the last returns give a total of thirty-four counties, some twenty less than were reported from last month. This state of things would be highly satisfactory if we could accept the belief that all or nearly all the cases came under the notice of inspectors. It is, however, quite evident that the disease has ceased in certain localities in which it existed a few weeks back.

FOOT-AND-MOUTH DISEASE.

The number of infected counties has been reduced from fifty-three, as last reported, to forty-eight, but the centres of the disease have been nearly doubled in number in the same time, owing to fresh outbreaks in Somerset, Staffordshire, Lancashire, Dorsetshire, and Yorkshire. For some time past the malady on the Continent has almost ceased to exist. Last month only twelve cattle were stopped by the inspectors, ten of them from France, which is the only country where the disease at present exists to any extent. The other animals stopped on account of foot-and-mouth disease were swine, principally also from France.

There can be no doubt that, with ordinary care, foot-and-mouth disease in this country ought by this time to have been reduced to its ordinary state of prevalence.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of July, 1870, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs
Boulogne .	London ...	Foot-and-Mouth .	10	...	...	...	10	10
Cherbourg	South-ampton...	,,	...	...	...	50	50	50
Hamburg .	Hartlepool	,,	...	11	...	...	11	11
,,	Middles-borough .	,,	...	...	...	2	2	2
,,	Newcastle-upon-Tyne	,,	2	...	...	...	2	2
	Total ...		12	11	...	52	75	75

"ALEXANDER WILLIAMS,

"Privy Council Office, Secretary.
"Veterinary Department, 11th August, 1870."

Facts and Observations.

THE FOSSIL HORSE IN MISSOURI.—In a paper read before the St. Louis Academy of Science, and reported in the *American Naturalist* for March, Mr. G. C. Broadhead records some interesting facts on the above subject. Alluding to the fact that horse remains had been found in the altered drift of Kansas, he says he is now able to announce that similar remains have recently been discovered in a well at Papinville, Bates County, Missouri. Mr. O. P. Ohlinger

procured a tooth at the depth of thirty-one feet from the surface, resting in a bed of sand beneath a four-inch stratum of bluish clay and gravel. Above the last was thirty feet ten inches of yellowish clay reaching to the surface. Beneath the sand, containing the tooth, was a gravel bed five feet in thickness, consisting mostly of rounded pebbles resembling river gravel, generally hornstone, many partially, and some firmly, adhering together. Other pebbles shown him from the same bed were of iron ore, coal and micaceous sandstone. He was farther informed that some remains of fluviatile shells were found. He sent the tooth to Professor Joseph Leidy of Philadelphia, who pronounced it to be the last upper molar of a horse, probably an extinct species. From a similar gravel bed on the banks of Marais des Cygnes, a fragment of a tusk was given him resembling very much that of a mammoth. Its whole length was said to be seven feet four inches. About ten miles above Papinville, the banks of Marais des Cygnes River appear to be of a similar formation to the well of Ohlinger, consisting of about twelve feet of brown sandy clay resting on ten feet of blue clay with many pebbles of worn gravel at the lower part. These gravel beds he considers as of more recent age than the drift, but older than the bluff or loess, and regards them as altered drift. They seem rather to abound on the Osage and its tributaries, and are often reached in digging wells.—*The Popular Science Review.*

Are the Pus-corpuscles derived from the White Blood-cells?—There is no question in microscopic anatomy which has attracted so much attention from physiologists as this during the past two or three years, and now it seems, according to the researches of M. Picot recently laid before the French Academy, June 20th, 1870, that the idea of Conheim that the pus-corpuscles are partly produced by the passage of the white blood-cells through the blood-vessels is altogether a mistake, is a misinterpretation of the phenomena in point. M. Picot, whose memoir was presented by M. Robin, gave a tolerably long account of his observations on the circulation of frogs and mammals, and he declares most positively that the white blood-cells never pass through the vascular walls, and that the pus-cells are formed gradually, external to the capillaries. He explains the error of Conheim and others, by stating that they confounded several focal planes together, and he considers that he has demonstrated this in the following way. He counted the number of white blood-cells in the arrested blood in the capillaries, both before

and after the quasi-exuded corpuscles appeared. In both instances he says the numbers were the same, and this could not have been if the white cells had passed outwards.—*The Monthly Microscopical Journal.*

Ciliary Movements and their Nature.—Mr. N. E. Green has been for some time engaged in observations on Rotifera and other microscopic animals, with a view to discover the exact character of the action of the cilia. In a paper on the subject, which is published by him in the *Journal of the Quekett Club* for July, he describes his several observations on Rotifera. Many very interesting and novel facts are recorded, but the nature of the ciliary movement is still practically left unsolved.—*Ibid.*

How Motor-nerves end in Non-striated Muscular Tissue.—A very valuable communication stating the results of M. Hénocque's researches has been published in the *Archives de Physiologie* (May), and may be thus abstracted :— 1. The distribution of the nerves in smooth muscle is not only identical in man and other vertebrate animals in which it has been observed, but is essentially similar in all the organs containing smooth muscle. 2. Before terminating in the smooth muscle, the nerves form three distinct plexuses or networks—(*a*) a chief or fundamental plexus, containing numerous ganglia, and situated *outside* the smooth muscle; (*b*) an intermediate plexus; and (*c*) an intra-muscular plexus, situated *within* the fasciculi of smooth fibres. 3. The terminal fibrils are everywhere identical; they divide and subdivide dichotomously, or anastomose, and terminate by a slight swelling or knob, or in a punctiform manner. The terminal swelling appears to occupy different parts of the smooth muscular fibre, but most frequently to be in the neighbourhood of the nucleus, or at the surface of the fibres, or, lastly, between them. The methods of investigation adopted by M. Hénocque have been very numerous, including the maceration of the preparations, obtained in as fresh a condition as possible, in aqueous humour, artificial serum, pyroligneous acid, chromic acid, chloride of gold and potassium, especially the latter, in a strength of $\frac{1}{200}$th.—*Ibid.*

THE VETERINARIAN, SEPTEMBER 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

DISINFECTANTS IN NON-INFECTIOUS DISEASES.

IN his intercourse with the world which lies outside his own exclusive circle the scientific man has very often to deplore the want of technical knowledge among those who may fairly claim to belong to the educated classes. It is eminently unsatisfactory to the philosopher to mark the utter blankness of expression which so commonly spreads over the face of one who has with due politeness been listening to an explanation of an obscure point in pathology or therapeutics, and to feel that the well-meant endeavour to enlighten has only rendered "confusion worse confounded."

Intelligence of high order seems to be of little avail when a point of science has to be comprehended; the mind which, albeit devoid of military knowledge, can at once grasp all the salient points in the description of a grand manœuvre, flounders hopelessly in the presence of a theory of inflammation; and the amateur who can follow with appreciative delight the intricacies of a long legal harangue, becomes puzzled in a short space under the influence of an argument on polarization, or the special relations of antagonistic atoms.

Sometimes, however, the unscientific educated man, as we must be allowed to call him, makes an effort to emancipate himself and stands forth as the critic of scientific literature, or professional proceedings, and then it is that, doing his own reputation some little damage perhaps, he nevertheless does service to the scientific man by clearly indicating to him, not the fallacy of his reasoning, but his failure to make his argument popularly intelligible. There are numerous instances in which this defect is apparent, notably one frequently occurring example presents itself,

we are constantly in the habit of advising the use of "disinfectants" with or without sufficient reason; the chemicals which are employed are comparatively inexpensive, the results of their application are, if not always beneficial, never injurious, and hence they are constantly prescribed. When an epizootic is known to be contagious in its nature, the first step in prevention is disinfection. When the disease is virulent, but sporadic and non-contagious, disinfectants are also enjoined as an essential part of prophylaxis. At this point the charge of inconsistency arises; disinfection, if it means anything, means the neutralizing or destroying of infectious material, and where no infection exists, disinfection is unnecessary. Such is the home thrust which the non-professional critic aims at the man of science; and the attack is not easily met, because on the face of it the recommendation of disinfectants for what is not infectious seems absurd; in a popular view of the matter, at least, although the chemist understands that a great deal more is implied in the term disinfectant, than the single property of disinfecting. Among the lower animals especially there are certain diseases prevalent only in certain localities or under special conditions. For want of a better name these affections are classed under the head of blood diseases, on the ground of an altered condition of the blood being an invariable element in the disease, whatever form it may assume; some of the affections are not in the ordinary sense of the word contagious, a healthy animal might be placed in contact with a diseased one without danger, and a diseased beast might be placed in the midst of a healthy herd in a healthy locality without any risk being incurred of spreading the disease; but on the other hand, animals from a healthy district cannot with impunity be brought into the neighbourhood of the diseased and be placed under the influence of the conditions which favour the development of the malady. Peculiar atmospheric changes; excess of organic matter in the water, imperfect development of the herbage, may one and all be concerned in the production of the affection, and the majority of animals which are brought within the sphere of

these influences succumb. The veterinary surgeon under these circumstances recommends the employment of disinfectants, not because he has to deal with an infectious disease, but because the agents which are employed as disinfectants exert a generally purifying influence upon all bodies, solid, fluid, or gaseous which are in a septic condition. Is it desirable to arrest fermentation or putrefaction, to destroy organic matter in solution, to kill animal or vegetable parasites, or to neutralize offensive odours? Some of the class of disinfectants are required to do duty for all these purposes, and they do it effectually. If the professional man wishes to be consistent and does not fear to be called pedantic, he may term the agent at one time a disinfectant, when he prescribes it in foot-and-mouth disease or pleuro-pneumonia; an antizymotic, when he uses it to arrest fermentation; an antiseptic, if he seeks to prevent putrefaction, but in each case the same general intention is apparent. The object is to destroy or neutralize by chemical means some noxious principle which will infect the animal system with a fatal disease, which is not infectious because it does not pass from one animal to another, yet owes its origin to poison floating, perhaps, in air or water, instead of in the secretions of the animal body.

There can be no doubt that much of the misunderstanding which commonly exists between scientific and unscientific men, depends upon the unnecessary employment of terms which recommend themselves by their sonorous tone rather than by their general utility.

It is not possible, perhaps, to express ourselves in technical language so as to be at all times intelligible to the uninitiated, but in so far as scientific terms are a bar to correct expression they are objectionable. Science has nothing to gain by seeking to be mysterious. Whatever words are capable of conveying ideas in the most exact and definite form are the best words for use under all circumstances. We do not decry the use of technical terms when they are necessary, but we hold that upon those who use them liberally lies the onus of proving their superiority over the language of common life. In microscopic observations

the lower the power which will show all the details of structure the better for the observer, may we not add in scientific description, the shorter the word which will express all that is intended, the better for the writer and the reader.

Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Every Man his own Cattle Doctor. By Francis Clater. Entirely re-written to the present date by George Armatage, M.R.C.V.S. London, Frederick Warne & Co.; New York, Scribner, Welford, & Co.

This octavo volume of six hundred and forty odd pages is to all intents and purposes a work on the diseases of cattle, by George Armatage, M.R.C.V.S., and we much regret that Messrs. Warne & Co. have not thought it advisable to publish the book with the true author's name alone on the title page. The system which has for some time been fashionable, we presume because in some way or other it pays, of editing old works, as it is called, meaning writing new books to old titles, is eminently unfair to the authors concerned. If Clater's book, or any other author's book records anything worth preserving, it should be kept intact. The man in his day and generation did then his work, and perhaps did it as well as it could then be done, all the good and all the evil in it belong to him, and no one has a right to rob him of the fruits of his labour, even if they are dead fruits. However, publishers are all powerful, and authors are poor, and so it comes about that the publishers have to decide what shall be written and who shall write it.

Clater's 'Cattle Doctor' in its present guise is a very useful work, profusely and generally well illustrated, contains a faithful description of most of the diseases to which cattle are liable, with plain directions for treatment of the more common diseases, and advice as to the necessary steps to be taken pending the arrival of the veterinary surgeon.

The author takes advantage of his opportunity to speak in the interests of his profession, but *nolens volens*, all veterinary works must partake largely of the popular style, if they are

to pay for the printing. Publishers know by stern experience that books addressed to the profession, in technical language, never find readers; and after all, readers form the style of literature, what they demand is sure in some way to be supplied.

We commend Mr. Armatage's work to the younger members of the profession particularly, as they will find in it many hints which will save them from blunders in the beginning of a country practice. Without any recommendation from us the book will find its own way into the farmer's library.

Memoranda for Emergencies; or, the Veterinarian's Pocket Remembrancer, being concise Directions for the Treatment of rare and urgent Cases, &c. &c. By GEORGE ARMATAGE, M.R.C.V.S. London, John Churchill and Sons.

A single quotation will convey an idea of the character of this little book, which will go into the pocket conveniently. We may suppose that an inexperienced hand is engaged in a difficult case of parturition, and after delivery is effected bleeding occurs to an alarming extent, the tyro, or, it may be, the old practitioner not often meeting with such cases, does not at once realise the situation. Turning over the pages of the 'Remembrancer,' which is arranged alphabetically, he finds, at page 94—

"HÆMORRHAGE AFTER PARTURITION

is of two kinds—*uterine* and *vaginal*. In the first variety the quantity is great, expelled by violence, and at different periods, with evident pain and suffering. Vaginal hæmorrhage usually flows in a small stream, arterial in colour, coagulating when it reaches the ground. Sometimes the umbilical cord in connection with a retained placenta, will permit a discharge of blood that may be mistaken for vaginal hæmorrhage. It, however, differs from the foregoing in being dark in colour, and does not coagulate. The first form is dangerous; the second need not occasion alarm.

"*Treatment.*—In hæmorrhage from the uterus, commonly known as *flooding*, assistance must be prompt. Remove the placenta, if retained, as quickly and as carefully as possible; if nothing else can be had at the time, administer full doses of turpentine made into an emulsion with eggs. Promote

the contractions of the uterus by injections of cold water, and even mineral astringents, as solutions of chloride of zinc, alum, perchloride of iron, or vegetable astringents, as tinctures of catechu, kino, galls, &c. &c. Exhibit draughts containing such remedies as mineral acids, tannic acid, powdered galls, perchloride of iron, &c. Promote the external surface heat by clothing and friction. Stimulants must be withheld until the hæmorrhage has subsided, and even then they must be given only with caution when the depression is great.

"In vaginal hæmorrhage the use of cold ablutions and astringent lotions is usually sufficient. If it arise from the cord it seldom needs interference. The hand, however, may be passed up, and the cord drawn into a knot, or the placenta may be removed. See ABORTION."

In many like cases of sudden doubt and difficulty the junior practitioner will find the 'Remembrancer' a very valuable pocket companion.

Extracts from British and Foreign Journals.

ON MEDICINAL PEPSIN.

By RICHARD V. TUSON, F.C.S., Professor of Chemistry at the Royal Veterinary College, formerly Lecturer on Chemistry at the Charing Cross Hospital.

SINCE the introduction of Corvisart and Boudault's "poudre nutrimentive" into medicine in the year 1854, pepsine obtained from the stomach of the pig,* calf, or sheep, in a state of greater or less impurity, has been extensively prescribed in dyspepsia and certain other affections. According to the testimony of some authorities of high standing, long experience in the use of this agent fully justifies Corvisart's predictions relative to its therapeutic value, which were originally based upon physiological reasoning. There are other authorities, however, equally eminent, who either express doubts as to the efficacy of pepsine, or positively state that it is totally devoid of medicinal power. This difference of opinion, in all probability, mainly arises from the circumstance that pharmaceutists supply medical men with various preparations, all bearing the same specific name

* First brought into notice by Dr. Beale.

of pepsin, but which differ very considerably in their digestive powers and other qualities. In fact, so far as I have at present been enabled to collect evidence relative to the merits and demerits of pepsin, I find those who speak favourably of its employment in the treatment of disease have prescribed that prepared by the best makers; while those who express a doubtful or adverse opinion respecting its value have been in the habit of prescribing those varieties or makes which the experiments of myself and others have proved to be practically without any digestive activity whatever. The relative digesting capabilities of several English and continental pepsins were investigated by Dr. Sieveking* in 1857, and a similar inquiry was conducted by Dr. Pavy† in 1863. The results of the experiments of both gentlemen indicated that there was not merely a difference in the qualities of the pepsin prepared by different makers, but that, as was particularly shown by Dr. Pavy, some of the examples examined were totally incapable of digesting muscular tissue. One would have thought that the publicity given to these facts in the medical journals would have caused the prescription of none but the best makes of pepsin, and that it would have induced those who had hitherto fabricated an inferior article to have either abandoned its manufacture or to have improved the methods they employed for its preparation. Such, however, is not the case, for pharmaceutists at the present date continue to vend, and medical men continue to prescribe, both the good and the bad qualities of pepsin. Only a few days ago an old-established and well-known wholesale druggist told me that a customer applied to him for two ounces of pepsin. He asked the customer whose make he required. The reply was, "the cheapest." On examining the kind of pepsin supplied on this occasion, it was found to be absolutely worthless as regards its power of digestion. Nevertheless it will be used medicinally, and if the patient derives no apparent benefit from its administration, the practitioner who prescribed it may be induced to condemn pepsin *in toto;* or, should the patient soon get better, the improvement will in all likelihood be attributed to a preparation which is perfectly inert. In the first case, injustice would be done to a medicine which, when properly prepared, is said by many eminent practitioners to possess great therapeutic value; and, in the second, a worthless preparation would receive credit for performing a service it is totally incapable of rendering.

Being about to conduct some investigations on artificial

* 'Medical Times and Gazette,' 1857, vol. i, p. 336.

† 'The Lancet,' April 25th, 1863.

digestion, and requiring for my purpose considerable quantities of medicinal pepsin, possessing the highest digestive energy, I purchased, in March last, samples of the principal English makers; also some of a French, as well as one of a German maker. These were examined in the manner hereafter described; and as the results arrived at corroborate substantially those obtained by Dr. Pavy seven years ago, although the methods of investigation adopted by that gentleman and myself differ,* I beg permission to lay the following account of them before the readers of THE LANCET, in the hope that it may induce those who are in doubt as to the value of pepsin as a therapeutic agent to reinvestigate the medicinal action of an agent which, according to theory, ought to render good service in cases in which the secretion of gastric juice is either deficient in quantity or defective in quality.

Ten samples of pepsin, obtained from different sources, were examined. The preparations of the several makers are distinguished from one another by letters in the following manner:—

A, A1 } Same make, but purchased at different houses.
B, B1 } Ditto, ditto.
C, C1, C2 } Ditto, ditto.
D
E
F.

EXPERIMENTS UPON ALBUMEN.

Fresh eggs were kept in boiling water for an hour, and then allowed to get quite cold. After depriving them of their shell, the whites are cut into the thinnest possible slices,† and great care was taken to reject any portions of yelk, as well as all slices of white of ununiform thickness. A weighed portion of coagulated albumen thus prepared was placed in a two-ounce wide-mouthed bottle, and covered with distilled water containing one per cent. by volume of concentrated hydrochloric acid.‡ These operations were conducted during the

* Dr. Pavy noticed the relative solvent action on frogs' legs of mixtures of pepsin and dilute acid.

† It is easier to observe the progress of the digestion of albumen if it be sliced than if it be minced.

‡ This degree of dilution was adopted from the circumstance that the

latter part of the day. Next morning the required amount of pepsin was weighed out, and added to the mixture of albumen and dilute hydrochloric acid. The bottle and its contents were then placed in a water bath, and kept at a temperature of 38 Cent. (100·4 F.). Digestion was regarded as complete when, at the end of four hours, particles of albumen could no longer be seen, and when the insoluble residue consisted of a very minute quantity of fibrous or membranous matters only. These observations were easily made, except in the experiments upon samples of pepsin containing large quantities of starch. In such cases, when digestion appeared to be finished, the result was not recorded until the contents of the bottle had been carefully elutriated, or strained through fine muslin, so that it might be ascertained with certainty, by the appearance of the residue in the bottle or on the filter (muslin), whether or not the whole of the albumen had been dissolved.

In the first series of experiments upon albumen, five gram-

Table showing Results of First Series of Experiments on Albumen (25 cubic centimetres of acidulated water).

Weight of Pepsin employed in Grammes.	MAKE OF PEPSIN.					
	A.	B.	C.	D.	E.	F.
0·050	Digested	Not digested	Not digested	Not digested	Not digested	Not digested
0·075	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·100	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·150	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·175	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·200	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·250	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·300	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·400	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·500	...	Digested	Ditto	Ditto	Ditto	Ditto
1·000	...	...	Ditto	Ditto	Ditto	Ditto
1·500	...	...	Ditto*	Ditto	Ditto	Ditto
2·000	...	...	...	Ditto	Ditto	Ditto
3·000	...	...	...	Ditto	Ditto	Ditto
4·000	...	...	...	Ditto	Ditto	Ditto
5·000	...	...	...	Ditto	Ditto	Ditto

results of special experiments indicated that it was more favorable to digestion than an acid of greater or less strength. It was also ascertained that water containing five per cent. of hydrochloric acid appeared to completely prevent the digestive process taking place. Is it, therefore, wise to administer acids along with or immediately after pepsin, in cases in which the stomach already contains an excessive quantity of acid?

* Experiments with this make of pepsin were here discontinued, in con-

mes of coagulated egg-albumen, and twenty-five cubic centimetres of distilled water, containing one per cent. of hydrochloric acid, were employed. The quantities of pepsin used are stated in the subjoined table, which is intended to show the relative amounts of the different makers (A, B, C, D, E, F) required to digest the same quantity of albumen in four hours. Two comparative experiments were in every instance set going at the same time.

It having been found impossible to continue the experiments with make C with more than 1·5 gramme of pepsin, in consequence of the inability of 25 cubic centimetres of acidulated water to keep the mixture in a sufficiently liquid state, a second series of experiments was performed, in which 50 instead of 25 cubic centimetres of diluted acid were employed. The weight of albumen used was the same as that in the first series—viz., 5 grammes.

Table showing Results of Second Series of Experiments upon Albumen (50 *cubic centimetres of acidulated water*).

Weight of Pepsin employed in Grammes.	MAKE OF PEPSIN.					
	A.	B.	C.	D.	E.	F.
0·050	Digested	Not digested	Not digested	Not digested	Not digested	Not digested
0·250	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·300	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·400	...	Ditto	Ditto	Ditto	Ditto	Ditto
0·500	...	Digested	Ditto	Ditto	Ditto	Ditto
1·000	...	...	Ditto	Ditto	Ditto	Ditto
1·250	...	...	Digested	Ditto	Ditto	Ditto
5·000	...	...	...	Ditto	Ditto	Ditto

From the results of the experiments detailed in the foregoing tables, it will be seen—

1st. That, in order to effect the digestion of a given weight of albumen, very different quantities of the pepsin prepared by makers A, B, C are required.

2nd. That taking the digestive power of C as unity, the digestive ratios of A, B, and C are as follows:—

C = 1 (1·25 gramme dissolves 5 grammes of albumen.)
B = 2·5 (0·50 ,, ,, ,, .)
A = 25 (0·05 ,, ,, ,, .)

sequence of the 25 grammes of acidulated water employed being insufficient to maintain the requisite fluidity of the mixture.

In other words, A is ten times stronger than B, and twenty-five times stronger than C.

3rd. That, inasmuch as coagulated albumen mixed with acidulated water and equal weights of D, E, and F gave not the slightest indication of being digested, even at the expiration of twenty-four hours from the commencement of the experiment, it is evident that such so-called pepsins are, to say the least, practically destitute of the power of digestion. A 1, B 1, C 1, and C 2 were tested in precisely the same manner as the other samples; and it was found that their digestive powers did not materially differ from the corresponding samples A, B, and C, which, it will be remembered, were prepared by the same makers, but obtained from different sources.

The evidence afforded by the results of the experiments already referred to will, doubtless, be considered quite sufficient to prove the existence of a wide difference in the digestive energy of certain of the pepsins met with in pharmacy, and the utter worthlessness of others. Nevertheless, the following series of experiments upon fibrin was undertaken for the purpose of ascertaining whether or not the results would accord with those obtained in the previous investigations upon albumen.

EXPERIMENTS UPON FIBRIN.

In these experiments 5 grammes of finely-minced fibrin (lean of rump-steak) were mixed with 50 cubic centimetres of distilled water containing 1 per cent. by volume of concentrated hydrochloric acid, and the quantities of pepsin stated in the following table. Temp. 38° centigrade (100·4° Fahr.); duration of experiment, four hours. Two comparative experiments invaaribly set going at the same time. When in consequence of the presence of starch, the progress of digestion could not be satisfactorily watched, the mixture was strained through fine muslin for the purpose previously named when describing the mode of experimenting with albumen.

Table showing results of experiments upon Fibrin.

Weight of Pepsin employed in Grammes.	MAKE OF PEPSIN.					
	A.	B.	C.	D.	E.	F.
0·45	Digested	Not digested	Not digested	Not digested	Not digested	Not digested
1·00	...	Ditto	Ditto	Ditto	Ditto	Ditto
1·50	...	Ditto	Ditto	Ditto	Ditto	Ditto
2·00	...	Ditto	Ditto	Ditto	Ditto	Ditto
3·00	...	Ditto	Ditto	Ditto	Ditto	Ditto
4·00	...	Digested	Ditto	Ditto	Ditto	Ditto
5·00	...	...	Ditto	Ditto	Ditto	Ditto

We are now enabled to see—

1st. That the relative digestive powers of A and B on fibrin are very nearly the same as those upon albumen, the ratios being

10 A to 1 B on albumen;

8·88 (in round numbers 9) A to 1 B on fibrin.

2nd. That inasmuch as five grammes of fibrin were undigested by equal weights of pepsins C, D, E, and F, these preparations are practically destitute of medicinal value.*

Having shown, from the results of nearly three hundred experiments upon albumen and fibrin, that the pepsin distinguished by the letter A is far superior in quality to that of any other make, it appears to me simply an act of duty to the medical profession, and of justice to the undermentioned firm, to state that it is prepared by Messrs. Bullock and Reynolds, of Hanover-street, Hanover-square.† In conclusion, I beg to thank my very able assistant, Mr. E. Lapper, for the aid he has rendered me during the prosecution of this inquiry.—*Lancet.*

August, 1870.

VENTILATION OF HOSPITALS.

A COMMITTEE of the Paris Academy of Sciences is now considering this very important subject, and a communication from M. Cornill Wœystin has just been presented and re-

* The fibrin remained undigested even at the end of twenty-four hours from the commencement of these experiments.

† Dr. Pavy also showed in 1863 that the pepsin of Messrs. Bullock and Reynolds was much more active than that of any other maker.

ferred to this committee. M. Wœystin criticises the present method of ventilation of hospitals, and asks how it is that, while certain doctors assert that a supply of eight to ten cubic metres of air per bed and per hour are sufficient to keep a ward in good conditions of ventilation, others insist upon a supply of twenty and even sixty cubic metres, while some even fix eighty as the minimum quantity. He accounts for these immense discrepancies in the following manner:— In a ward containing, say, ten beds, the warm air is introduced between the two ranks of beds by means of five orifices in the central passage, while the vitiated air is drawn off through other orifices behind the beds. Thus, says M. Wœystin, a number of currents are formed from the inlets to the exit passages, which do not sufficiently draw away the intermediate layers of air, and thus cause many regions or currents of air not sufficiently ventilated, which become veritable reservoirs of infection; and this he believes to be the true reason of the increasing demand for a larger amount of fresh air. The introduction of a greater quantity of fresh air, according to M. Wœystin, only increases the rapidity of the currents, and has little effect upon the strata of air which lie above and around them, between the inlets and ports of evacuation; the object, therefore, should be, not to introduce masses of air, but to make better use of that which is admitted. To remedy this, M. Wœystin suggests the application of a well-known system—that of wire-work, or gauze; he recommends that the orifices for the introduction of fresh air should be covered by such a screen, reaching from the floor to the ceiling, and that the exit holes should be protected in like manner, so that the movement of the air should be graduated and dispersed over the entire contents of the ward. The importance of this question cannot be overrated; all the world knows what relief has been obtained of late years, in the case of fevers, by a free use of fresh air, and the subject has been tested in a very remarkable manner in France, both in towns and in camps. Patients have been placed under tents where the supply of fresh air wes constant, and the temperature low, with an amount of success that gives immense importance to such experiments. It must not be forgotten, however, that draughts do not supply wholesome ventilation; and the shutting off, or rather the attenuation of them, must conduce to the comfort and well-being of the sick.—*Food Journal.*

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

OBSERVATIONS ON INVERSION OF THE VAGINA OF THE COW.

By M. Deneubourg.

The inversion of the vagina is of frequent occurrence in the cow. I have never seen it in the mare (the author observes), though M. Walravens states that he has seen five cases in the mare; no doubt it seldom occurs in the equine species. In the females of the smaller species it would be of little interest in a practical point of view; all we shall state on this subject will, therefore, have reference to the female of the bovine species. The principal cause of the inversion of the vagina, the author says, is in the constitution and the conformation of the animals, which in general is that of good milkers; in fact, it occurs about the time of parturition, or after a prolonged stabulation in badly-constructed sheds. Animals most subject to it are the best milkers, and often in perfect health disposed to fattening, very fecund, and with a strongly developed pelvic region. This agrees with the opinion of the late director of the Veterinary School at Lyons, in his treatise on parturition, in which he informs us that all practitioners are agreed that cows in calf, of a lymphatic constitution are exposed to it; and he adds that the Swiss breed of Fribourg, which is kept in the dairies of the vicinity of Lyons, are strongly disposed to this affection. In some cases it appears when the cows are not in calf, while in others, on the contrary, it appears at the commencement of gestation, to disappear when the period is more advanced, and reappear at the time of parturition. In others, again, it only occurs a short time before parturition, and becomes more intense in proportion as the latter progresses. Lastly, in some instances it is permanent, whether the animal is in a state of gestation or not before as well as after parturition. Without entering any further into the explication of the phenomenon in its development and its progress, which are not important, we may say that a protrusion of the vagina, when the animal is down, is not of any consequence, it is only necessary to place the animal in the shed, so as to elevate the posterior part somewhat higher than the anterior, more particularly when in the subcumbent position. Nevertheless, if the cow is in calf, and the protrusion is of

large size, so as to render the spontaneous reduction difficult, the suture of the vulva should be resorted to as a preventive; notwithstanding the inversion, the cows might be in perfect health, bear a calf every year, and give a good quantity of milk; they require only a little extra care at the time of parturition, which should not be hastened by untimely interference before the second water bladder appears,* which, when torn open, exposes the limbs of the fœtus, which, the presentation being natural, might be taken hold of, and with a moderate traction the parturition accomplished, always taking advantage of the straining of the animal, and ceasing the traction the moment the efforts of nature are suspended. As soon as the expulsion of the new-born subject is completed, it is necessary to make the animal get up; this will tend to replace the uterus and vagina should there be a tendency to inversion. But our object is only the practical examination of chronic inversion of the vagina, that organ presenting itself in the shape of a considerable tumour, which does no longer reduce itself when the animal is standing, and has become irritated by the alvine evacuations, dirt of the litter, the action of the air, friction of the tail, and other hard bodies, causing its membrane to become ulcerated, discharging a bloody ichorous fluid, and giving to it a disgusting aspect which is increased by the thickening of the mucous membrane, consequent on the infiltration and the hardening of the subjacent cellular tissue.

Sometimes the inverted organ acquires a considerable size, rendering the reduction difficult without the assistance of the scientific practitioner. This stage is accompanied by impaired digestion, and consequently loss of flesh and emaciation of the animal, to which might be added other causes of exhaustion, such as the bad quality or insufficiency of fodder, perhaps a live fœtus in the uterus. Nothing would be more disastrous than the effects of a pessary or bandage which would complete the work of destruction. We do not deny that the prolapsus of the vagina may become serious, even mortal; and we admit that it is in the last months of gestation that the animal affected is in some danger. The reduction of the introverted vagina is not very difficult; a few manipulations will frequently suffice to effect it. The operatory process in the most difficult cases is as follows:—The animal being placed on an inclined plane, the fore part being lowest, an assistant holds

* In a work on Parturition, the author describes two water-bags in the large animals, more particularly in the cow, one formed by the allantoid, which appears in the form of an elongated bladder, and the second one formed by the amnios.—Vide *Annales Vétérinaires, Juin*, 1861.

the head elevated by pinching the nostrils, while another prevents the arching of the back by pressing on it, a third holds the tail elevated above the loins, which latter favours the dilatation of the pelvic cavity, the prolapsed organ having been well washed with plenty of warm water, in order to cleanse it, the operator without fear of injuring it by manipulations, which, on the contrary, rather by favouring the circulation, render the organ supple and reduce its size, proceeds to return the inferior and lateral parts first, so as to reduce the whole by a postero-anterior motion, the pelvic cavity being of larger size on the upper part, consequent on the relaxation of the sacro-ischiatic ligament, and the elevation of the position of tail, there need be no fear of employing the necessary force to the manipulation. On no occasion have we found it necessary to scarify the parts or continue the manipulation for more than five minutes; neither have we applied astringent lotion. We have applied the suture without any hygienic preparation or therapeutic agent whatever. The modus faciendi is by uniting the labbii with two or three strong metallic sutures placed at a short distance from each other, but connected together by a metallic wire of a small size.

The operation terminated, there is generally more or less tumefaction of the parts, for which the author recommends cold water lotions for three or four days.

These two or three sutures or clasps connected together form an apparatus of retention when sufficient hold has been taken of the parts, which will remain in position for six or eight months without inconvenience, and no expulsive efforts of the animal, however violent, will disturb or cause the tissues to rupture; consecutive inflammation is not to be apprehended. Considerable tumefaction may even take place without interfering with the due evacuation of the urine.

We have not followed the author in his critical examination of the different processes of retentions recommended by authors, for the prolapsus of the vagina and the uterus, it suffices to say that, without absolutely condemning them *in toto*, he considers his the simplest, the cheapest, and the most effective.—*Recueil de Médecine Vétérinaire*, June, 1870.

Query.—Do I read correctly at p.654 of the last number that a veterinary witness states that when the horns of cattle are cut short the brain might protrude, without, however, causing death? is that the teaching of any of the schools?—not to forget that the *Veterinarian* is read all over the Continent.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

The twenty-fifth quarterly meeting of the Liverpool Veterinary Medical Association was held at the Medical Institute, Hope Street, on Friday evening, August 12th.

The chair was taken by the President, Thos. Greaves, Esq., of Manchester; there were also present—Messrs. Morgan, Elam, Ackroyd, Harwood, Davies (Liverpool); W. H. Cartwright (Whitchurch); Storrar (Chester); Dobie (Birkenhead); W. C. Lawson (Woolton), and the Secretary.

The minutes of the previous meeting were read and confirmed.

The President acknowledged the receipt of a letter from Mrs. Lawson, of Manchester, in reply to a memorial of condolence from the Association.

Mr. W. C. Lawson read the following paper on "Grease in the Horse," prefacing his remarks on that disease with a clear epitome of the structure and functions of the skin.

It is my unenviable lot to appear before you again in place of one of two of our valuable members, from whom we were led to expect something; their engagements however preventing them, our worthy Secretary at the eleventh hour wrote me, and I foolishly consented, that there might be a programme; I therefore throw myself on your generosity, merely introducing this paper as a text for discussion.

Proceeding to the consideration of the disease "grease," we have first presented to our notice cracked or chapped heels, as a mild form of the disease; you will, therefore, not think it unworthy your attention should I glance over it, for "just as the mighty oak from the tiny acorn grows" so is it with cracked heels, for if not early checked they are liable to proceed to grease. The animals we are most likely to find suffering from cracked heels are not always those we find most liable to grease, they belong to a class of animals which do not generally suffer from grease, unless there has been the greatest possible neglect, I allude to the well-bred horse. I think it would be almost impossible to produce cracked heels in a young thoroughbred, except in very exceptional cases; I say young because I believe age renders the animal more susceptible on account of a decreased vitality. We frequently find horses suffering from naviculartbritis with hard segs in the pasterns, which I think proceed from two causes, viz., the increased vascularity of the part, extending to inflammation, from some predisposing cause, and in some cases the application of cold water, which is productive of cracks in cold weather, whether the former disease exist or not. I affirm, therefore, that cracked heels occur subject to incidental circumstances in cases where the balance of circulation is irregularly maintained. Another great cause is the continual trimming of the heels, the mode of operation of this cause, I hope will be touched upon in the discussion, as I am

fully assured that it is the cause of œdema and grease in a great number of post horses so treated. I can at the present moment point to a stable where the coarser bred and more wiry coated horses are all so affected, the hair having become more like bristles. In these cases it is preferable to take out by friction or hand rubbing merely what is loose, the hand being sprinkled with powdered resin to render it slightly adhesive.

The symptoms of cracked heels are heat, and in white heels, redness, pain, and swelling; if the inflammation is not quickly subdued, we have in some cases pustules forming in the heels, and in others simply a crack or cracks, from which issues an oily discharge; if the cracks are deep we may probably have large sloughs coming away which will make it a tedious case, and cause great lameness, with a greater or lesser amount of constitutional disturbance. The treatment before any crack is visible is hot water fomentations, and bran poultices, with a little oatmeal sprinkled amongst it, arnica lotion, and a dose of physic; diet to consist of bran mashes, grass, boiled turnips, raw potatoes, or carrots, &c.

When the cracks appear the treatment must be different; if the parts are inclined to slough, a dry poultice, half bran and half oatmeal, to the wound will prove almost a specific for bringing on a healthy action, the oatmeal having a most surprising effect in reducing the inflammatory symptoms, the angry red appearance of the edges of the wound and the pain. Should this, however, not suffice, a mixture of calomel and lime water (blackwash), or a sprinkling of calomel itself will soon suffice, with a high-heeled shoe to prevent a too great extension of the skin of the pastern. Afterwards treat as a common wound, with digestives and astringents, as the case may require. Where there are hard segs in the heels, counter irritation to produce sloughing is necessary. Dose of physic and diet as before, with an occasional diuretic.

We now come to the consideration of the heading of this paper, and when I pronounce to you the title—"Grease," I ask you, Gentlemen, what is it? for I can assure you none of the authorities I have consulted have answered me this question to my own satisfaction. I want to know from our numerous and talented microscopists, the various changes which occur in the structure of the sebaceous glands, hair, follicles, &c., &c., in the transition from health to that abnormal and unsightly condition in which we are accustomed to see the limb. I have not finished, Gentlemen, by an appeal to our anatomists and physiologists only, but I desire to know from our analytical chemists the various changes occurring in the nature of the discharge in the various stages of this disease; I look upon it as requiring not only for its cure but for its prevention a treatment based upon scientific principles, which I am sorry to say we are even to-day in want of. In the midst of our sorrow, however, we have reason to be joyful at the many subjects which are daily emerging from the mists which have hitherto obscured them, to the brightness of perennial day, let us hope that the subject we are at present interested in may be one added to the number.

In the first place, it does not appear to me to be settled beyond dispute as to the specific character of this disease. From experiments, conducted by Jenner and others, it would seem to have been considered that the virus from a horse can produce cow-pox. I think it high time a matter of so much importance should be quoted either as fact or fallacy. The late Prof. Dick fails to mention it in his manual. Prof. Gamgee says I have always described two forms of grease in the horse, the one in which the lymph was capable of inducing a well-marked eruption in man, and the other very similar in character, but unassociated with the development of a specific virus, and which is commonly the result of diffuse cutaneous inflammation, occurring under a variety of circumstances and often as a sequel in cases of inveterate cracked heels.

Mr. Ceeley says, "I have met with several intelligent dairymen whose relatives had seen good reason to ascribe its occurrence to the contagion of the equine vesicle, communicated by the hands of the attendants of both animals, but very little of that disease has been noticed of late years, though I know of several farriers who have been affected from the horse, and resisted subsequent variolation or vaccination, and have seen a few who distinguish between the equine vesicle and the grease, a recurrent disease eczema impetiginodes, as it appears to me."

The disease is at present believed to commence in an inflammatory action of the sebaceous glands, accompanied by an alteration of the secretion, which soon spreads to the surrounding tissues of the skin. It is divided into three forms, simple, ulcerative, and grapey. The symptoms of simple are those of inflammation, one or both hind legs becoming tumefied and very painful, accompanied by a greater or lesser amount of febrile symptoms, if not speedily arrested, which will frequently be found very difficult, and in some cases all efforts will prove abortive, the affection soon proceeds to the ulcerative stage, and large cracks will be visible in the heel or round the back part of the fetlock, from which will issue a loathsome oily discharge; on examination these cracks will be found to extend to adjoining cracks, and indeed the tumefied cuticle is detached from the deeper seated tissues for a considerable distance round the wounds.

The diseased surface will soon be seen to throw out excessive and unhealthy granulations, and also other parts where no wound is seen to exist, which leads one to believe that the discharge thrown out from the sebaceous glands is altogether changed in character. The hair, in time, according to the severity of the case, may or may not fall, but in severe cases it does, and the few hairs remaining are short, stunted, and bristly. The disease is always aggravated and the discharge more fœtid in well-conditioned horses, and in wet weather; indeed in dry weather the discharge will frequently cease, and an irritable itchiness supervene, causing the horse to stamp violently. Grease most frequently commences in the spring and autumn, from various causes, among which may be mentioned the increasing vascularity of the skin at the time of the change of the coat, the increased amount of wet at

those periods, change of diet, &c. The autumn is the most prolific season of grease, from the fact of animals being confined in close stables, and bad atmospheres, immediately after coming from grass, and having an entire change of keep. It remains for us to inquire also if those noxious vapours, always so close to the hind extremities, do not become absorbed locally, and impregnate the tissues, having perhaps an affinity for some of the latter, unite with them, and so form a compound poison and detrimental to the animal economy, for have we not already seen the power of the skin to absorb gases.

I have had occasion to notice before now the tendency of horses engaged in removing night soil to contract this disease ; we are, fortunate in having one amongst us who can refute or corroborate my testimony in this instance, I allude to our worthy secretary, Mr. Reynolds ; if it is so, is it due to the absorbtion of a gaseous irritant, or the actual contact of wet and irritating matter? Constitutional we know it is, therefore hereditary.

I certainly agree with Professor Gamgee that frequent trimming of the legs is an exciting cause of both grease and cracked heels, and if they must be trimmed, I believe a run over with the singeing iron afterwards would prove beneficial in sealing up the ends of the hair and protecting the deeper seated parts from the action of the air, pure or foul.

Grease is said to be contagious, it is a sequel of debilitating diseases and dropsy, and not unfrequently terminates in farcy and glanders. It is frequently caused from want of exercise in plethoric animals, from œdema and weed, treads or injuries, cold and wet, and from firing or severe blistering; and when I add, the inattention to which the hind legs are subject from the groom, on account of the danger incurred; and in some cases the moist and uncleanly state of their situation in the stall, and their being farthest removed from the centre of circulation, I think I shall have mentioned most of the causes of grease, and likewise dwelt sufficiently long on them before such a practical body of men.

The treatment of this disease differs in its various stages, for instance, in the simple or œdematous, if the cause is plethora, I should apply dry poultices of hot salt and meal, with a little tincture of iodine poured on to the poultice, the heat of the salt causing fumes of iodine against the skin, stimulating the absorbent glands to increased action, I should take a small quantity of blood and administer a dose of physic; after the purging has ceased, give the following alkaline medicines alternately, iodide of potassium, carb. of ammon., and nitrate of potash ; should this treatment, however, not prove successful in preventing ulceration, I recommend the same treatment as for the wounds in cracked heels—meal poultices and blackwash where the discharge is oily—if the cracks communicate under the cuticle I would join them with the sealpel. If we have to treat this disease in a low conditioned animal we must on no account bleed or purge, or we should be likely to produce farcy and glanders, but we may give with advantage daily one drachm of cupri sulphas, one drachm

iodine, and one drachm iod. potassi. If the case has proceeded to the grapy form, and we have a fœtid and acrid discharge, I should prepare the animal by first giving laxative and alkaline medicines, with a hot wet poultice of bran and oatmeal, and the addition of a little yeast, as recommended by Blaine, this will be found to have an excellent effect in the alteration of the discharge. I should next take a scalpel and cut off the excrescences, prefering it to the use of the actual cautery, using that only in case of undue hæmorrhage. I should then apply a tight bandage, covering the parts operated on with equal quantities of a powder of sulph. of zinc and flour or meal simply to arrest the hæmorrhage and produce a healthy action, this done, apply caustics in abundance to slough away all the roots.

I recommend the use of calomel along with the aloes in this disease to be used as a laxative or cathartic.

I omitted to remark that wherever we have discharge it is necessary to remove the hair for a considerable distance round the wound, as becoming saturated it tends to its spread and further development.

A knowledge of the chemical changes which occur is necessary, likewise of the anatomy and functions of the skin, to lead us to scientific conclusions as to the treatment of grease. I have thrown out this evening one or two observations not, perhaps, thoroughly general, respecting the means which I have tried with advantage, and should they be disproved in the lively discussion which I look forward to, I shall be glad to adopt and give those which may be recommended a fair trial, and shall feel myself in a measure repaid for the few nights I have spent to produce this hasty and imperfect paper, which does so little credit to the subject and one's self, in time for you this evening. I would venture to suggest that in future before our meetings terminate arrangements be made to prevent a like occurrence.

The discussion which followed, embraced also "weed" or inflammatory œdema, and as far as the practical consideration of the subjects was concerned, it was animated. Arguments pro and con as to bleeding, local and general, to various topical applications, the use of purgatives, diuretic, and tonics, were advanced by the members.

It is to be regretted that some points of scientific interest referred to by the essayist did not receive more attention from the members, as some progress might have been made in elucidating the true nature of the disease, as well as the real changes that result in the structure and secretions of the parts affected.

Mr. C. W. Elam exhibited the brain of a horse, on which were developed two large tumours; one was situated on the base, the other appeared to arise from the left ventricle, but had caused absorption of a great part of the hemisphere of that side.

Votes of thanks were accorded to the President, Essayist, and to Mr. Elam.

RICHARD S. REYNOLDS,
Hon. Secretary.

CENTRAL VETERINARY MEDICAL SOCIETY.

The Provisional Committee enrolled at the first meeting, assembled in the board room of the Royal College of Veterinary Surgeons, on Wednesday, July 28th, Mr. G. Fleming, M.R.C.V.S., Royal Engineers, in the chair.

The report of the sub-committee was read by the *Secretary*, together with the bye-laws and regulations submitted by them, which after slight verbal alterations were agreed to. Members of Council, Vice-Presidents; with Mr. G. Fleming, President; G. Armatage, Secretary; and J. Woodger, sen., Treasurer, were elected. Professor Williams (Edinburgh), Mr. J. Broad and Mr. E. Woodger (Paddington), were admitted members, and the society arranged to hold the first ordinary general meeting on Tuesday, the 4th of October, at seven o'clock in the evening, and subsequent quarterly meetings on the first Tuesday in January, March, May, and October in each year, for the reading of papers, discussion of medical subjects, admission of members, &c.

Provision was made by which scientific committees may be formed for the investigation of unsettled points in veterinary science, and also for the establishment of a library and museum at no distant date.

Particulars relative to admission, &c., may be learned on application to the Secretary, Eastlake Road, Camberwell, S.E.

George Armatage, M.R.C.V.S.,
Secretary.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The summer quarterly meeting of this Society was held in the committee room of the Mechanics' Institute, Leeds, on Friday, the 29th July, at 12.30 noon. The President, Mr. Jas. Freeman, in the chair; there were also present, Messrs. Anderton, Broughton, Cuthbert, Dray, Faulkner, Fearnley, Naylor, Nicholson, P. Smith, and P. Walker. Apologies for non-attendance were received from Messrs. McTaggart, Patterson, Jno. Freeman, Joseph Freeman, Pratt, and Carter.

The minutes of the previous meeting were read and confirmed.

The *Secretary* read a letter from Mr. Jas. Howell, tendering his resignation as a member of the Society; after some discussion it was unanimously resolved to desire Mr. Howell to reconsider his decision.

The *Treasurer* complained of several members being in arrears with their subscriptions and fines, and one member being two years in arrears, it was unanimously resolved that his name be struck off the list of members. A telegram was received from Mr. Wm. Taylor, of Wetherby, who had promised to read a paper, announcing

his inability to be present owing to a very pressing professional engagement which had detained him at the last moment when about to start off for Leeds. The *President* therefore invited any member to introduce a subject that might induce discussion.

Mr. Dray introduced the "Patent Rubber Horse Shoe Pad," and some practical remarks thereon were made by Messrs. Dray, Cuthbert, Walker, and Anderton.

The utility of Mr. Broad's treatment in laminitis was next spoken of, Messrs. Freeman and Dray and other gentlemen speaking highly of its efficiency.

Mr. Walker exhibited a singular and interesting case of fracture that had occurred in his practice recently during the operation of castration. The colt was the property of S. L. Tee, Esq., of Appenley, near Bradford, and was cast in the usual manner; when one testicle had been excised the colt made a slight struggle, when a sudden crack was distinctly heard by all present; the operation being concluded the colt was unable to rise and was consequently immediately destroyed; upon examination the external condyle of the femur of the off leg was found completely detached, the fracture extending from the upper and posterior surface of the condyle forward, including the inferior third of the outer anterior articulatory surface of the bone. Upon Mr. Walker making inquiry he ascertained that the colt was found by the coachman a few mornings prior to the day of the operation to be very lame without any visible cause, but as the lameness soon disappeared Mr. Walker's attention was not required at the time. Mr. Walker is therefore of opinion that the fracture without displacement had occurred when the lameness was observed and became complete during the time the colt was cast.

Mr. M. E. Naylor related an interesting case of ruptured stomach in a horse. The patient had been under Mr. Naylor's care for six weeks, suffering at the first from acute indigestion; the animal had apparently quite recovered, when alarming symptoms supervened and death took place before Mr. Naylor arrived; the coats of the viscus did not present any appearance of organic disease where the rupture occurred.

The next meeting of the Society will be held in October, when Mr. Nicholson, of Wornersley, will kindly introduce a paper for discussion. WM. BROUGHTON, *Hon. Sec.*

NORTH OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Association was held in the Mechanics' Hall Buildings, Aberdeen, on the 21st ult., when twenty-seven members were present.

Mr. Dewar, after having thanked the members of the Association for the courtesy and kindness manifested towards him during the past year of his presidentship, and for their renewed confidence and

appreciation of his humble efforts on its behalf in having again elected him to fill that honorable position, briefly referred to the present state of veterinary science, and incidentally glanced at the most important questions which had recently occupied its attention.

Mr. McGillivray, of Rayne, Aberdeenshire, thereafter read an essay on the "Internal Parasites of our Domestic Animals," for which he had been awarded a medal by the Highland Agricultural Society of Scotland. The essay was listened to with marked attention, and clearly evinced the ability and comprehensive knowledge possessed by Mr. McGillivray in dealing with such an extensive subject.

A general discussion followed, when votes of thanks were heartily accorded to the Chairman and Essayist, and the meeting terminated.

Mr. Hay, of Ellon, agreed to open a discussion at next meeting of Society, on the "Recently introduced Treatment of Laminitis."

J. B. TAYLOR, *Secretary*.

THE NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Society was held in Gray's, Adelphi Hotel, Newcastle-on-Tyne, on Friday, 15th July, at 4 o'clock in the afternoon. Mr. Dudgeon, V.S., Sunderland, President of the Society, in the chair.

The following members were also present, viz.—R. Brydon, Seaham; C. Hunting, South Hetton; H. E. Wilkinson, Newcastle-on-Tyne; D. Macgregor, Bedlington; H. Hunter, Newcastle-on-Tyne; A. Mann, Wingate Lane; C. Stephenson, Newcastle-on-Tyne; and the Honorary Secretary.

The minutes of the previous meeting were read and approved, after which the President called upon *Mr. Manns* to read the essay of which he had given notice, subject—

"Diseases affecting the Digestive Organs of Cattle."

The essay was listened to with marked attention, and gave rise to considerable discussion, every member present taking part. The usual vote of thanks being awarded brought the meeting to a close.

JOHN MEIKLE, *Hon. Secretary*.

PRELIMINARY EXAMINATION.

[We have been requested to publish the following scheme for securing uniformity of action between the English and Scotch Colleges, in carrying out the details of the "Preliminary Examination."

Our readers will have observed from the advertisements which have been issued by the Governors of the Royal Veterinary College, that although they—the Governors—have declined entering into a formal agreement with the Scotch Colleges, they have nevertheless adopted the principle of having the preliminary examination of the

pupils conducted by an educational body totally independent of the teachers at the College.]

"AGREEMENT proposed by the Edinburgh Veterinary College, and agreed to by the Glasgow Veterinary College: Declined by the Royal Veterinary College, Camden Town, London.

"The three different Colleges above mentioned, parties to this Agreement, with a view to prevent irregularities and abuses, and to improve the position and status of the Veterinary profession, have agreed to carry out a Preliminary Examination of Students presenting themselves for admission to any of the said Colleges with a view to become Veterinary Surgeons; and having discussed the terms thereof, have agreed, as they hereby agree, upon the following as the Articles and Rules to be observed.

"*First.* From and after the date of this Agreement Students entering any of the three Colleges named, with a view to become Veterinary Surgeons, or to practise the Veterinary Art under the Diploma of Examining Boards now recognised, shall be bound to undergo a Preliminary Examination before their names can be enrolled as Veterinary Students, with a view to obtaining a Diploma entitling them to practise the Veterinary Art.

"*Second.* The Examinations shall be conducted by Boards, consisting of at least two Examiners to be appointed: one Board in London, from Officers of the College of Preceptors, appointed for the purpose by the Governors of the Royal Veterinary College; another Board in Edinburgh, consisting of Teachers of the High School, nominated by the Trustees of the College; and a third Board in Glasgow, consisting of Teachers of the High School of Glasgow, nominated by the principal of the Glasgow Veterinary College; and the three Boards shall determine upon a given series of questions, in order that the Examinations and Tests may be as nearly as possible identical at the three institutions; and shall for the present be confined to the following subjects:—

"1. Writing from dictation.
"2. Parsing a simple sentence.
"3. Reading aloud.
"4. The first four Rules of Arithmetic, and the simple Rule of Three.

"*Third.* The Examinations shall be conducted in London, Edinburgh, and Glasgow annually, at such dates and places as may be fixed by the Examiners, so as to meet as far as possible the convenience of the Students; and all Students entering for a Winter Session shall pass their Preliminary Examinations on or before the 25th November in each year, otherwise that Session shall not be taken into account of the curriculum of study, so as to entitle them to go up for examination for a Diploma to practise, sooner than Christmas two years thereafter.

"*Fourth.* Any Student found not qualified at his Preliminary Examination at one College, shall not be eligible to get himself re-ex-

amined or entered at any of the Colleges as a Veterinary Student again for six months; and with a view to prevent any irregularities in this respect, each of the three Colleges shall be bound to transmit, within three days after the result of each Examination has been fixed by the Examiners, a list of the names and addresses of the Students found disqualified, or who have not passed the Examination, with the date or dates of Examination; and a private Register shall be kept at each College, in which shall be recorded the names and addresses of such Students, with the dates of Examinations; and each College shall be bound to reject or refuse to re-examine any Student entered in such Register, until the expiry of six months from the date of the former Examination.

"*Fifth.* Candidates applying for admission to either of the three Colleges with a view to become Veterinary Surgeons, shall not be enrolled in the list of such, without passing the Preliminary Examination,—*excepting* Candidates who may have obtained a Degree in Arts, or who hold Certificates of Educational Examination from Oxford, Cambridge, the Universities of Edinburgh, Dublin, Glasgow, Aberdeen, St. Andrew's, or some other acknowledged public Educational Board.

"*Sixth.* Each of the three Colleges, parties to this Agreement, shall keep a Register of all Students attending the respective Colleges, in which shall be entered in separate lists (*First*), the names and addresses of all Students intending to become Veterinary Surgeons; (*Second*), the names and addresses of such Students who may have been examined, and who have passed the Preliminary Examination; (*Third*), the names and addresses of the Students who have been examined and have been rejected, or have not passed the Preliminary Examination, with the dates and particulars of each diet of examination. (*Fourth*), Students who cannot produce a Certificate or evidence of having passed their Preliminary Examination, shall not be entitled to present themselves, or himself, to any of the Examining Boards with a view to examination for a Diploma to practise.

"*Seventh.* The Board of Examinators of the Royal College of Veterinary Surgeons and the Board of Examinators of the Highland and Agricultural Society, shall not receive any Student for examination with a view to obtain the Diplomas, or either of them, which these boards have hitherto been in use to grant, except upon production of the necessary Certificate or other evidence to instruct that before commencing his course of Veterinary instruction at any of the Colleges referred to, the Student has undergone and passed the Preliminary Examination; or unless his examination has been rendered unnecessary under one or other of the exceptions above referred to.

"*Eighth.* A Fee sufficient to cover the expenses of the examination shall be exacted from the Candidates.

"*Ninth.* The stipulations and obligations in this Agreement shall not apply to Students who may have already commenced their Studies, and been enrolled at any of the three Colleges prior to the date hereof."

ARMY APPOINTMENTS.

War Office, *August 2nd.*

Veterinary Surgeon W. B. Edmonds, from the Royal Artillery, to be Veterinary Surgeon, vice E. Stanley, who resigns.

August 9th.

Veterinary Surgeon of the First Class, Alfred Job Owles, from the 6th Dragoons, to be Staff Vet.-Surg., vice J. W. Gloag, who has retired upon half-pay.

August 16th.

9th Lancers.—Veterinary Surgeon Edwin Thomas Cheeseman, from Royal Artillery, to be Vet.-Surg., vice Vet.-Surg. of the First Class, William C. Lord, who retires on half-pay.

August 26th.

3rd Hussars.—Acting Veterinary Surgeon Stuart Murray Wilson to be Veterinary Surgeon, vice Alfred Adrian Jones, who resigns.

The undermentioned Acting Veterinary Surgeons to be Veterinary Surgeons, viz. — Richard Rowe, William James Masters, Joseph Gibbs, William Capes, Algernon Pitcher, Walter Henry Kemp.

Veterinary Department.—The undermentioned gentlemen to be Acting Veterinary Surgeons: — Samuel Luis Pallin, vice Wilson, appointed to 3rd Hussars; Alfred Ernest Queripel, vice Rowe, appointed to the Royal Artillery; Charles Phillips, vice Masters, appointed to the Royal Artillery; Benjamin Lucas Glover, vice Gibbs, appointed to the Royal Artillery; Frank Garratt, vice Capes, appointed to the Royal Artillery; Charles John Grey, vice Pitcher, appointed to the Royal Artillery.

Veterinary Jurisprudence.

NORFOLK CIRCUIT.—BURY ST. EDMUNDS.

DEATH OF SHEEP FROM DIPPING.

SMITH *v.* BARKER.

This was an action to recover compensation for damage done to a flock of sheep by the use of the defendant's chemical solution.

Mr. O'Malley, Q.C., Mr. Mayd, and Mr. Blofield were counsel for the plaintiff; Mr. Bulwer, Q.C., and Mr. Naylor for the defendant.

The plaintiff's case was that in the month of April of this year he bought some wash for his sheep of the defendant, an agricultural chemist living at Sudbury. With the composition a printed bill was given explaining its object, which was to destroy ticks, lice, &c., in sheep and lambs, and giving directions for its use. A caution was given about carefully keeping the head of the animal out of the liquor. At the top of this printed bill the following notice appeared:—"As this composition is of a poisonous nature, J. Barker will not be responsible for any accident that may occur from its use."

Mr. Smith gave the mixture, with the printed directions, to his men, who it was proved were unable to read or write. They managed the dipping of the sheep, but Mr. Smith himself was not present during the operation. There were 110 sheep dipped and 137 lambs. Within three or four days of the operation 18 died, as the plaintiff asserted, from an over large mixture of arsenic in the fluid; and for their loss, as well as for the expenses incurred by the veterinary surgeon's attendance and medicine, amounting in all to upwards of £200, this present action was brought.

The defendant's case was that the mixture was perfectly good and properly compounded: that it had been in use among various flockmasters for some time past; and that the mischievous result was caused entirely by the ignorance and mismanagement of the defendant's men, who had not mixed a sufficient quantity of water, as pointed out by the directions, with the contents of each bottle of the solution.

The jury found a verdict for the defendant.—*Times*.

SENDING BAD MEAT TO LONDON.

Alleged Existence of a Nail in the Heart of the Animal, and the frequent presence of Metallic Substances in this Organ.

On July 16th, at the Guildhall police court, Thomas Fisher, a knacker, carrying on business at Mattishall, in Norfolk, was summoned before Sir Sydney H. Waterlow for sending three quarters and a half of beef to the London market for sale as human food, "the same being diseased, unsound, unwholesome, and unfit for the food of man."

Mr. Baylis prosecuted on behalf of the Commissioners of Sewers, and said that the animal belonged to a grazier in the defendant's neighbourhood, and having the lung disease he sent to the defendant to kill it for the dogs. He attempted to drive it home, but it fell in the road, and he was obliged to kill it there. He afterwards took the carcase to a slaughter-house and had it dressed. The ribs had been stripped to hide the mark where the lungs had adhered to them—a thing that was never done in the case of healthy beasts. The meat was sent to London, but when it arrived here it was entirely unfit for human food, and was brought to this court and condemned.

Evidence having been given in support of Mr. Baylis's statement, the defendant contended that the meat was fit for human food when he sent it from Norfolk, but that the hot weather had made it become putrid. He considered it a clean, healthy beast, and too good for the dogs. When the animal dropped down he did think it had lung disease, but when it was opened he saw that it had fallen from its having *a nail in its heart*.

One of the witnesses—a butcher—stated that he had known many cases where animals had a nail or a needle in the heart and lived for months. In one case an animal had a small rod of wire in its heart and yet lived for some time.

Sir Sydney H. Waterlow said he had a reluctance to send a man like the defendant to prison, but he must fine him in the full penalty of £20, and £5 5*s.* costs, or in default one month's imprisonment.

The defendant said he must serve his month, for he could not pay the fine.—*Standard.*

THE LATE MOWING MATCH AT BARTLE—ALLEGED CRUELTY TO ANIMALS.

On the 7th ult. a mowing match took place at Bartle, Woodplumton, for £50 a side, the competing machines being those of Messrs. Picksley, Sims and Co., of Bedford Leigh, near Manchester; and Mr. A. C. Bamlett, Thirsk, Yorkshire. Each machine, drawn by two horses, was to mow ten statute acres of grass against time. The machine of Messrs. Picksley, Sims and Co. did the work in 11 hours 58 minutes, and that of Mr. Bamlett in 12 hours 31 minutes; and the judges therefore decided in favour of the first-mentioned implement. However, one of the horses employed by Messrs. Picksley, Sims and Co. died five or six days after the trial, and the other appeared to be in such agony that it was shot. These circumstances having come to the knowledge of Mr. Peter Hayward, of Bradford, an inspector in the employ of the Society for the Prevention of Cruelty to Animals, he made certain inquiries into the matter, and the result of his representations to the society in London was that the whole of the persons immediately concerned in the match, or who took an active part in it, were summoned for a breach of the Act for the Prevention of Cruelty to Animals. The parties connected with the machine of Messrs. Picksley, Sims, and Co., were all included in one charge, namely, Mr. Joseph Wilding, managing director for the company; Mr. Alexander Macgregor, their engineer; Mr. Charles Cryer, their Preston agent; James Johnson, the driver of the horses; and the judges, Messrs. Henry Neild, farmer, Grange, Worsley, near Manchester; Christopher Richmond, farmer, Thornton, near Liverpool; and William Clarke, farmer, Bispham, near Ormskirk. In another charge were included those persons connected with the machine of Mr. Bamlett:—Mr. Charles Greenside, his engineer; Mr. T. Standing, his Preston agent; and Mr. William Martin, farmer, who drove the horses. The first mentioned charge was heard on Saturday, Aug. 18, at the County petty sessions, before Messrs. Peter Catterall (chairman); W. Howitt, J. B. Booth, D. Irving, and A. Simpson.

Mr. Harris, barrister, of London, instructed by Mr. Hayward, was counsel for the prosecution; and Mr. J. Addison, instructed by Messrs. R. and W. Ascroft, appeared for all the defendants, except Mr. Clarke, who conducted his own defence.

Mr. Harris, in opening the case, said that the facts of the case were extremely revolting. Four horses were employed to draw two mowing machines; and he was bound to say, without exaggeration,

that two of those horses were so much over-driven that they were, in fact, worked to death. One of them died five or six days after the work, and the other suffered so much that, as an act of mercy, it was shot. The question was, who was responsible for this gross act of cruelty? It appeared that there were two rival firms of mowing-machine makers, Messrs. Picksley, Sims, and Co., and Mr. Bamlett. They had been endeavouring to outvie each other a long time in the making of such machines, and some day last month they entered into a contest, the conditions of which were prepared and signed. The mowing machine of each firm was to mow a piece of ground 10 acres in extent. The persons who signed the conditions would be found to be Joseph Wilding, one of the defendants, and the managing director for Messrs. Picksley, Sims, and Co. It would be idle for him to say that he did not cause the animals to be over driven. He was one who said they should mow ten acres in one day. Therefore, he caused the horses to be "ill-treated, over-driven, and abused." So much for Joseph Wilding. But he (Mr. Harris) might as well tell the Bench what Wilding said when the officer of the society went to him. "I am responsible;" and "I think it is a very proper complaint for the society and the police to make."

Mr. Addison: That is not the fact, and it is not in evidence. I object now to what is mere gossip.

Mr. Harris continued: Well, then, so much for Joseph Wilding, and James Johnson the driver. The articles having been signed, judges were appointed, and those judges were three other of the defendants—Henry Neild, Christopher Richmond, and William Clarke. The horses were not allowed to start until they gave the word, and consequently they immediately and directly caused them to embark on this tremendous exertion. The judges were there the whole day, and saw these horses labouring and distressed, and almost fainting, and yet they never attempted to stop the cruel proceedings. Let them see what those judges thought of the work that was going to be done. They would find from the evidence of a gentleman, the surveyor, that when he was requested by Messrs. Nield, Richmond, and Clarke, to mark out the several plots of land of ten acres each, he said it was too much for any horse to accomplish in one day. Mr. Neild said they agreed that it was a great deal too much, and that he wanted it to be reduced, and had sent a telegram to the other side, asking if they would reduce the space. A telegram came back saying, "Stick to the original agreement." The judges knew it was too much, and yet they suffered the trial to go on. In a further conversation on the matter Neild said, "We shall be had up for cruelty to animals." That was actually before the match took place.

Mr. Addison: Get to the facts.

Mr. Harris: I will give you plenty. Alexander Macgregor, the engineer, with another of the defendants, was present. He was helping to superintend on behalf of the company, and was, therefore, directly engaged in it as much as the driver himself. Charles Cryer, the Preston agent of the company, was also present, super-

intending the proceeding, as well; and James Johnson was the driver of the horses. Now, he would show what was the cruelty. The horses began to work at six o'clock in the morning. Messrs. Picksley, Sims, and Co.'s horses were light animals, and those of Mr. Bamlett were heavy. They went on mowing with a respite of 20 minutes only while a machine was repaired, one hour for refreshment in the middle of the day, and a few minutes afterwards—making about two hours of intermission altogether. They finished the work about nine o'clock at night; so that the horses were out of the stable fifteen hours at least. The ground was rough, the grass was heavy, and the pace was swift. He would show that the utmost a horse ought to do with one of these machines, if fairly dealt with, was six acres; but they got labour out of them necessary to mow four more acres. Every horse was distressed. They were most willing creatures: so willing that they went until they could no longer go.

Mr. Caterall: Were they urged on?

Mr. Harris: We say the horses were too good to require whipping, and went at their utmost speed and effort. Sims' horses were in good condition before the match—perfectly healthy up to the very day. Next day, however, they were prostrate in the stable of an inn. The court will hear from veterinary surgeons that the animals were in a state of the utmost prostration and anguish. They were rolling their heads about, and endeavouring to raise themselves, but were so utterly prostrated that they could not get up. On the sixth day after the trial their eyes, cheek bones, and shoulder bones were all raw from the motion occasioned by their agony, and one of them died. It is for the defendants to show what he died of. We say he was killed by over-work. The other horse lay for another day or two, but never got up. A veterinary surgeon who saw the animal used every appliance to restore him, but at length, seeing the poor creature writhing in agony, he ordered it to be shot. The two animals were worth from 70 to 80 guineas. This was a life and death contest between these two firms. It was the value of their machines that was at stake, and it did not matter if they killed twenty horses, if one firm could beat the other. Mr. Bamlett's horses were heavy horses; they went through the same amount of labour, and showed the same amount of distress at the finish, but next day seemed to be all right. Even supposing that Sims' horses had not died, I think that a bench of magistrates would say that ten acres were too much to be mown by two horses in one day; and when they were told that they were at work fifteen hours, judging from any principles of humanity, I think they would say that these horses were over-driven. If so, the offence would be made out. No doubt it was a great contest; and nobody would say that it was an act of cruelty to engage horses in any sport or contest if you only use them fairly. But six acres would have been a fair test, and why not test them with that amount? Those are the facts; and I cannot help saying that this is, to my mind, about the most cruel case I have ever opened since I

have had the honour of appearing on behalf of this society.—The learned gentlemen then called his witnesses to prove the facts of the case.

[The length of the evidence prevents our giving other than the opinions of the veterinary surgeons who were subpœnaed in the case].

Mr. William Heaps, veterinary surgeon, Preston, said: I was called on the day after the trial to see the black horse, about noon. I found him suffering from inflammation in his feet, accompanied by an excessive amount of constitutional disturbance. The animal was in a profuse perspiration, and breathing very hard. His pulse was about 120 in the minute; he had also a very haggard and anxious countenance. The grey horse, which I saw afterwards, was in a similar condition. Neither of them had colic when I saw them. The grey one died on the following Friday. I made a *post-mortem* examination. He was in a healthy condition, constitutionally. There was a little congestion of one of the lungs, and slight inflammation of the intestines. The inflammation of the feet was caùsed by mismanagement on the day of trial. The mismanagement was due to the treatment of the animals by the men in charge. They had had a large quantity of flour and water. Laminitis or inflammation of the feet proceeds from overwork. I have known flour and water, and even crushed wheat, produce laminitis. The flour and water would be very likely to produce it. In my opinion, laminitis was certainly not produced by the animal working twelve hours. They were clean-legged, well-bred cart horses. By Mr. Catterall: They would not require much urging. By Mr. Addison: I don't consider that shaking the reins over a horse's back is urging. I don't think the grass had anything to do with it. If it had been from over-exertion I should have expected more inflammation of the lungs. By Mr. Harris: Flour and water is given as a stimulant.

Mr. Greaves, veterinary surgeon, Manchester: I was last year President of the Royal College of Veterinary Surgeons, London, and have had thirty-seven years' experience. I saw a horse.—Mr. Addison: We have no evidence that the black horse was shown to this witness.

Mr. Wareing was re-called. He said: This is the gentleman to whom I pointed out the black horse.

Witness: I made a *post-mortem* examination, and found an absence of any disease, but a considerable softening of the muscles throughout the system, and the walls of the heart indicated intense suffering. The flesh was clay coloured, soft, and flabby, in consequence of exhaustion of nervous energy. I consider that this state was produced by that accompanied by malignant intermittent fever. This was four or five days after it was shot.—Mr. Addison: It had been buried and dug up again. *Witness:* I have seen numbers of similar cases.—By Mr. Harris: The amount of work the horse had gone through would produce a state of exhaustion, which would bring on all the subsequent results I found had taken place. I

could see very little laminatis. If there had been intense laminitis we should have had separation of the hoof from the lamina. There was no evidence of separation. There was very slight congestion of one lung, which would very likely take place after death. In my opinion the horse would present the symptoms I have described from the work he had been put through. Cross-examined by Mr. Addison: I saw the horse on the Friday (it was shot on the Monday previous). I could not judge as well of the horse as if I had seen it immediately after being shot. My impression is that he had suffered from laminitis, and intermittent fever, which always accompanies laminitis. I have never known flour and water produce laminatis. It might do so in a horse of high nervous temperament. You could not have got horses of low nervous temperament to have done the work. Bamlett's horses were of less nervous temperament. By Mr. Clarke: The effects that followed over-work killed the horse. I cannot say what would be a fair day's work for horses at mowing. I don't know the draught of a mowing machine. Mr. Clarke: Then why say so positively that they were killed by over-work? By Mr. Harris: I could not judge so well after they were dug up as the day after death. There was no disease to account for death. In my opinion the horse died from over-work. *Mr. Addison* asked if witness had any remuneration from the Society for the Prevention of Cruelty to Animals?—Mr. Harris said nobody had.

Mr. Nuttall, veterinary surgeon, said he agreed with the evidence of Mr. Greaves in every particular. I should not have shot the horse so soon. In my opinion, he died from over-exertion, and that alone.—*Mr. Addison:* And that alone! Then the bullet had nothing to do with it? (Laughter.) After a horse had been a week ill I should expect it to exhibit symptoms of exhaustion. Can you distinguish between the symptoms of exhaustion arising from a week's illness and that produced by over-work? After a great deal of hesitation, the witness said it would not be an easy thing. *Mr. Addison:* I should think not. *Witness:* I should think it would take a great deal of flour and water to produce laminitis. *Mr. Addison:* Then you don't agree with the distinguished gentleman who has just given his evidence? *Witness:* Not in everything. I consider mowing hard work. Suppose we had given you the draught of the machine, what do you think would be a sufficient quantity for a pair of horses to mow? *Witness:* About six acres.—*Mr. Harris:* That is an answer to my friend's own question.

Mr. Addison rose to reply. He said this prosecution was instituted under the Act of Parliament for the prevention of cruelty to animals, but the real intention and meaning of that Act had been lost sight of altogether. Everybody of right feeling must sympathise with those who would prevent that wanton cruelty which a man could not inflict without knowing it. After referring to persons of good feeling being urged to get up such societies as that for the Prevention of Cruelty to Animals, in order that a number of other persons might exist and live upon salaries, and to the getting up of sensational cases such as this by persons connected with the society, as

had been done by one of the witnesses. Mr. Addison said that person had gone to gentlemen one after another, not to tell them that he was about to take out informations against them—but he put a number of questions to them, that he might come here and give evidence against them. After pumping the defendants, then he came in at the end, like a policeman or a lawyer's clerk, and said, "Call me; I will prove everything." Whatever the object of this prosecution might be, whether to get subscriptions in this neighbourhood or otherwise, he (Mr. Addison) trusted that nobody would ever give a penny to a society who sent out informers to get up such cases as this. Were they to introduce a kind of Ten Hours Act to regulate the number of hours that horses were to be worked? Was every gentleman who took out his horses to have a spy set upon him? Did they not admit that they overdrove their horses when they went to Blackpool and back in one day? Races, steeplechases, and so on, were ten times worse; but in every one of such cases we should have these meddlesome persons bringing them up before the magistrates. It was not for that Bench, or any other Bench to decide whether nine or ten hours was enough for a horse to work. This was a contest between the makers of mowing machines to test which was the better of the two; and proceedings were taken against them as if that was an improper thing—as if such rivalry was a proper thing to be put down. It was a question whether such rivalry had not done more to advance the science of agriculture than anything else. It had brought to perfection these very machines. It was a thing which, if properly conducted, the Bench would look upon with favour, and not disfavour—the honorable rivalry existing between the two firms of Picksley, Sims, and Co., and Mr. Bamlett. This case had arisen out of the fact that two horses died. The contest took place on the 7th July, and all the evidence of what was seen and done was known on the 8th, or that night. If there was cruelty or ill-treatment, then it was patent to all who saw it; and yet it was not until after the horses had died or been shot—it was not until the 25th, when some silly rumours arose, and people said, "Oh, they have killed these horses," that this case was got up as a sensational thing. He had not seen his friend (Mr. Harris) before, but he opened the case with a kind of eloquence which one was accustomed to hear more on a Sunday than on a week-day. (Laughter.) What was it that shocked society in this case? Why, the allegation that these horses were actually driven to death—a monstrous piece of nonsense, as it turned out now. Mr. Heaps, a brother of the other veterinary surgeon, who not only attended the horses all through, but was present at the contest, would tell them all about it. He perfectly agreed with his brother that the horses died from having been improperly fed, which produced laminitis. If they had died from fatigue there would have been congestion of the lungs to a greater degree. Then they had had paraded before them—no doubt a skilful man—sent down by the society. He and Mr. Nuttall told them they got up the corpses of these horses four days after they had been buried. It was a piece of nonsense to say that they could tell

what was the matter with the horses when they were alive, after such a lapse of time. It was too bad of them to come there and swear up to the mark as they had done. Mr. Superintendent Tindall, who saw the horses when they left the field, said he was perfectly surprised at seeing them afterwards when they were ill. The horses of Mr. Bamlett were perfectly well after the trial, and had since been sold at an increased price. Was not that sufficient to show that what a horse could do easily and well could not be an improper thing. There was nothing at all in the amount of work done to call for animadversion. In his mind the defendants were in no sense guilty of the offence imputed to them. If they were, then everybody who saw the trial were equally to blame. There were eight policemen and a superintendent there, and, as the day went on, gentlemen of position, and humanity, and feeling; but not a soul interfered, or was aware that any cruelty was being perpetrated. If there was any cruelty, he should like to know why Mr. Tindall and all the gentlemen and magistrates who were there were not summoned. They saw all that was going on, and were all equally guilty. But Mr. Tindall saw nothing wrong, even when he followed the horses up to the stable. They had been going at the rate of a mile and a half an hour, and for three or four hours of the day they were doing nothing at all; and every witness said there was no urging or pushing of any kind. The drivers had whips, but neither of them seemed to have used them. There was no stumbling in the field, no signs of fatigue, no holding up, or anything of that kind. But it got out that one of the horses had died—that was sensational; then that one of them was shot, and that made it worse. He did hope that this society would be bound over to keep the peace, and not meddle with other people's business for the future. (Laughter.) If they were to take cognizance of such things as that, we should all be subject to meddlesome interference without end.

Mr. Catterall said he observed that all were charged with "causing" or "procuring." Now, supposing they were to draw up a conviction in that language, would it hold water?

Mr. Harris: We have thousands of convictions in the year.

Mr. Addison said that in the event of a conviction he should ask for a case.

Mr. Catterall said his impression was that it should be drawn up in the form of the summons.

Mr. Harris observed that all their summonses were taken out in that form, and the magistrates determined on what was proved.

Mr. Catterall: Suppose there is evidence of over-driving on the part of the driver, that would be an act of commission; but could they couple with that the fact that the other persons "procured" it?

Mr. Addison said the case would not stop there if the magistrates convicted.

Mr. Harris did not know whether that was a threat or not, but they could discuss that point afterwards.

Mr. Catterall: Now, how would "overdriven" apply to the driver?

Mr. Harris: He was doing it.

Mr. Catterall: That is one class of offence—doing it; but the other? Suppose the magistrates come to the conclusion to convict.

Mr. Harris: I am quite willing to take the responsibility.

Mr. Addison then called the following evidence:—

Mr. Thomas Heaps, veterinary surgeon, said he was present from about one o'clock until they went into the last field. Did not see any overdriving or ill-treating; certainly not. He should think the work was not too much for the horses to get through. Was afterwards called in to see the horses. The grey horse that died, died from acute laminitis, arising from overheating. He had not the slightest doubt about it. Examined the grey horse before it died, and also after death.

By *Mr. Harris:* Am in practice now. I believe the horses would have been taken ill without the work, because of the flour, which produced a large amount of constipation. Saw as much as half a bucket of flour given to the two horses, not once or twice, but repeatedly. Examined the feet of the horses. There was sloughing and division of both the fore feet. The grey horse was the worst. I differ from Mr. Greaves as to the cause of death. I deny that the horse died from overwork.

William Dacre, veterinary surgeon, Bolton. Examined the two horses with Mr. Heaps, and agreed with him. Saw the black one while alive.

Mr. A. Challinor, veterinary surgeon, Bolton, was present when these horses were bought for Messrs. Picksley, Sims, and Co., for the purpose of working mowing machines. Was present at the *post-mortem* examination. Saw the black one when ill. Agreed with Messrs. Heaps as to the cause of death.

By *Mr. Harris:* The laminitis may have been caused by overexertion, but I don't think so. I will not undertake to say that the horse did not die from overwork, but don't think so.

John Smith Darwen, veterinary surgeon, Bedford Leigh: Knew these horses before the trial. They were in good condition. Don't think the amount of work was too much, considering the time they did it in. Attended the *post-mortem.* In my opinion the laminitis was produced by the flour. Once had five cases of laminitis on one farm, from the men getting to the wheat and ignorantly giving it to the horses out of mistaken kindness.

By *Mr. Harris:* Flour is sometimes given to horses by way of nutriment, but they should be very careful. I drive my horses sometimes as much as fifty miles a day, and am compelled to do it.

Other witnesses having been called for the defence,

The magistrates retired for consultation, and returned into court after an absence of a quarter of an hour.

Mr. Catterall said the decision he was about to pronounce was a unanimous decision, which was more satisfactory than if they had been divided. The magistrates were unanimously of opinion, after

a fair and impartial investigation, that they were bound to dismiss the plaint, although this was a proper subject for inquiry.

Mr. Addison applied for costs on behalf of some of the defendants especially.

Mr. Harris said the Society was put to great cost, and this was a proper inquiry. It was in the discretion of the Court.

Mr. Catterall: We had better retire again to consider that. There is a good deal to be said on both sides.

Mr. Addison: I hope the Bench will consider the way in which the Society has got this case up.

The magistrates again retired, and in a few minutes returned, when *Mr. Catterall* said the Bench would give no costs.

The case occupied the Court exactly seven hours.

[Mr. Greaves wishes us to state, with reference to the evidence given by him, that, in his opinion, the condition of the flesh did not depend either on the animal having been shot, or on the carcase having been buried for four days prior to his examination. Indeed, the flesh had been somwehat preserved by being placed in the ground during this time. He was also of opinion that the horses were of such physical constitution that they would have worked until they dropped dead. The mowing of ten acres of a light crop of grass in cool weather, and on even ground, differs materially, he says, from the circumstances of this case, as the work was done on rough ground and on a hot day; the crop was also a heavy one. The conclusion to which he came with regard to the work being the real cause of the illness of the animals, was drawn from the historical facts of the case, and from the pathological condition of the several organs of the body.]

COLEMAN PRIZE.

In our last number we gave the names of the successful competitors for the *Silver* and *Bronze Medals*, and *Certificates of Merit*, as constituting the Coleman Prize. We have now to request the gentlemen—winners of the prize—to be present at the opening of the ensuing session at the College, at which time the medals, &c., will be distributed.

OBITUARY.

We regret to have to record the death of John Constant, Esq., M.R.C.V.S., late half-pay 5th Dragoon Guards, which took place on July 18th, at Ramsgate, Kent, in the 82nd year of his age.

Mr. Constant served with the 13th Light Dragoons at Waterloo, and was the last surviving veterinary surgeon who was present in that engagement. His diploma bears date July 21st, 1813.

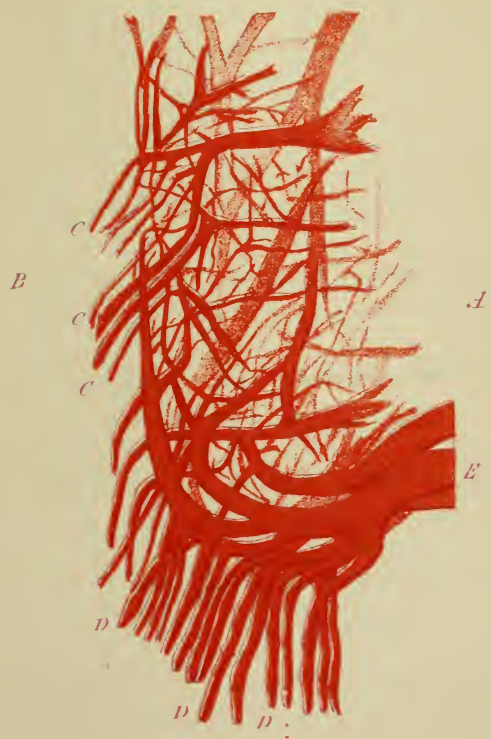


Fig. 22. — *Injected vessels of the lower end of one of the lamina. A. Posterior or fixed border of the lamina. B. Free border of the lamina. C. Villi given off from the free border before the lamina reaches the sole. D. Villi at lower end of lamina. Vessels from the lower border of os pedis. Moderately magnified.*

THE

VETERINARIAN.

VOL. XLIII. No. 514. OCTOBER, 1870. Fourth Series. No. 190.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from p.* 670.)

The Laminæ.—Immediately beneath the coronary cushion and coronary zone we come to the tegumentary tissue covering the front, sides, and a small part of the inferior face of the os pedis. At a glance it will be noticed that the integument, which had been so greatly thickened to form the prominent cushion just described, submits to another abrupt modification at the commencement of the white zone, by becoming all at once greatly attenuated, and transformed into a wonderful series of vertical ridges or "vascular laminæ" (fig. 12, *f*), whose study is of much moment to the comparative anatomist and pathologist, as they have proved for some years a fertile source of discussion and speculation. A little examination will also demonstrate that this thin derm has, in a curious manner, become confluent with, or so closely connected to the periosteum (the membrane covering bony surfaces) of the pedal bone, that they cannot be separated, and, in fact, form one firm, closely-attached, fibrous membrane.

In structure this tegument, or "dermo-perioste," exhibits a very marked predominance of white or inelastic fibres over the elastic; and this fact, together with its close attachment to the bone, proves that fixity, and not elasticity, was the object chiefly sought to be attained in this region.

Stretching from the white zone in a direct line down to

the lower border of the os pedis, all around its wide sloping surface to the wings, and reflected on the inner aspect of these, is seen the assemblage of thin ridges which have been designated as the "vascular" or "sensitive laminæ," or "podophyllæ (πους, ποδος, foot, and φυλλον leaf). These are of a bright or deep red colour, and resemble nothing so much, perhaps, as the crimping of a lady's frill, the leaves of a partially opened book, or the folds of a fan when nearly closed. They are arranged in the nicest order, and with mathematical precision; in health they are of an equal thickness from top to bottom, and uniformly parallel, looking as if the dermo-perioste had been evenly and regularly puckered up around the front and lateral aspects of the os pedis. Their number has been variously estimated at from 500 to 600. The longest, of course, are in front, to correspond with the depth of the bone and hoof in this situation, and the shortest are placed towards the heels and within the wings of that bone, where they terminate. Their upper ends abut on the white zone of the plantar cushion, and their lower extremities, reaching the inferior border of the bone, end in comparatively large papillæ, becoming continuous with the integument covering the sole, with the exception of those inside the wings, which do not so terminate. The width of each leaf, or rather the depth of each interspace, varies to a degree somewhat proportionate to its length, being greatest in the front laminæ, and least in those behind. But even the widest are narrower above, towards the white zone, than they are nearer the bottom of the foot. Not only is this the case, but as we turn over leaf after leaf, and get well round towards the heels, we occasionally come upon some which are not one half the width of their fellows.

The free edge or border of each is much thinner than that next the foot, and though all the laminæ in front are completely separated from each other by what appears to be a wide channel or groove, yet at their base they approach each other so closely as to convert this groove into an angular or V-shaped space. Into these interspaces there closely fit, and are retained, similar horny processes or laminæ that belong to the inner surface of the hoof-wall. The consideration of the relations between the two series of laminæ will be adverted to shortly.

Before their minute structure was properly understood, it was estimated that, through their duplications, the external superficies of the cylinder of the foot was enlarged six, seven, or even twelve times: that is, the laminæ, if spread out, would cover a surface twelve times larger than the actual superficies

from which they spring. On a horse about fifteen hands high, this surface was calculated to be about 212 square inches, or nearly one square foot and a half. Recent microscopic research, however, would tend to show that in reality this extension of surface is considerably understated, and that, by a wonderful arrangement of the sides of the laminæ, their superficies is immensely multiplied.

In their minute structure, they are found to be composed of similar elements to the papillæ or villi which we have just described. The basis or framework of each leaf is a thin, closely-woven mesh of white fibrous tissue, given off from the dermo-perioste. These fibres, which are in reality a continuation of those covering the bone, evenly and compactly like a sock, are arranged in a somewhat definite manner to resist vertical strain, and offer but few elastic fibres among them, so far as I can perceive. Each leaf, examined with the microscope, would appear to be composed of two attenuated planes of white fibrous tissue, proceeding parallel to each other from the top to the bottom, and which serve to sustain the blood-vessels and nerves so freely distributed to it. They are all covered by the same fine membrane which envelopes the villi of the coronary cushion, sole, and frog. This membrane, in the fresh state, is always thickly covered with soft epithelial cells, which cause the laminæ to feel moist and greasy.

The bed or "dermo-perioste" from which the laminæ arise has been aptly named the "reticulum processigerum" or leaf-supporter. It is rather thick, especially at the front and sides, and within its meshes is disposed a gorgeous network of blood-vessels, that proceed from the little apertures so numerous on the face of the bone, and of itself constitutes a conspicuous scarlet covering.

From this vascular system a number of arteries pass transversely to the fixed border of the lamina, where they run parallel with it from top to bottom, throwing off at intervals into the substance of the leaf numerous tiny branches, which again detach others from their sides. These ultimate ramifications form loops with their collaterals in a wavy manner towards the free margin of the lamina, and this close, but exceedingly beautiful arrangement of arteries gives the leaves quite a fleshy appearance.

I have always remarked that the inflammation in laminitis, in the great majority of cases, if not in every case, is most concentrated around the front and lower portion of the vascular structures covering the os pedis, between the patilobe eminences on each side, and generally extends upwards to above the level

of the preplantar groove. The inferior limit of this space corresponds to the external orifices of the descending canals, which emit the branches of the circumflex artery.

Hair-like veins spread themselves over the interior of these leaves, in a similar series of graceful festoons, to carry away the impure blood to the gradually increasing trunks in the fibrous leaf-bed. Nerves also, the last twigs of those larger branches which pass down the limb to the foot, wander over the entire structure of each lamina to confer sensibility.

From the fundamental elements of the laminæ being composed of inelastic fibres, and these but continuations of those forming the covering of the os pedis, they possess in reality but little elasticity, and that chiefly in a vertical direction. Their firmness and tenacity is very great.

The membranous, vascular, nervous, and fibrous structures we have described as composing the laminæ, are not devoted solely to the formation of only a series of leaves, each with a thick base, gently thinning to a somewhat sharp, free border, and *smooth lateral surfaces*. Such has been the descriptions given in all the treatises on the anatomy of the horses' foot, published up to the present time, I believe. In 1858, however, while engaged in a course of microscopical examinations of the structures entering into the composition of this organ, I observed, for the first time, a very wonderful arrangement of lateral laminæ, or leaflets (which I have designated "*lamellæ*") on the sides of every leaf. These lamellæ run from top to bottom of each lamina, are extremely delicate and very numerous, incline slightly forwards, and appear to be given off from the lamina in single fibres; though I am inclined to think this is an illusion, and believe each lamella to be in reality in itself a secondary lamina, formed on the side of the primary one, just as the latter is derived from the dermo-perioste of the bone. They are of extreme tenuity,—so fine, indeed, that I have not been able to make out their structure satisfactorily, though they may be assumed to be only a miniature copy of the parent leaf, invested with basement membrane.

If we make a fine transverse section of one of the laminæ, and then view it with a high magnifying power, we will find that these lamellæ give it a plumose or fern-like appearance—the secondary series of leaflets standing out from its sides, something like the barbules or featherlets of a quill. Their relations to each other, and to the lamina, remind one very much of the gill of the eel, with its branchial lamellæ.

When speaking of the horny laminæ and lamellæ, with

which they are so closely connected, we will notice some other peculiarities in their structure.

In the meantime, it may be well to remember that the lower ends of the laminæ terminate in comparatively large papillæ, like those on the coronary cushion. Not only is this the case, but frequently we find one or more long papillæ springing from the free border of the laminæ at various heights. These are in structure like those on the coronary cushion.

Integument Covering the Sole.—The membrane covering the sole of the os pedis and the inferior surface of the plantar cushion, and which has usually been designated by farriers the "fleshy," "velvety," or "vascular sole," is only a continuation of the derm, or rather dermo-perioste, investing the face of the bone. It is of a bright red colour, like the other parts of this membrane, though this tint is not unfrequently concealed, or partly obscured in patches by dark-coloured pigment cells diffused in its structure.

The membrane itself is composed of the same elements as elsewhere; and towards its surface its fibres are closely and densely woven, affording support to the myriads of arteries which course about and give rise to those elegant vascular reticulations before described.

On the sole of the bone the membrane is much thicker than it is on the plantar cushion, from the circumstance that on the latter it is not confluent with the periosteum, having separated from it on leaving the os pedis.

The face of this tegumentary covering of the sole is, like that of the coronary cushion, thickly set with papillæ, which stand above it as close as the pile of the finest velvet, and may be displayed most distinctly by suspending the foot in water. They possess the same features as the papillæ of the coronary cushion, each consisting of a basement membrane, enveloping a conical, fibrous framework, which supports a delicate arrangement of blood-vessels, derived from the larger canals, coursing everywhere over the sole, with nerves, and, in all probability, lymphatic vessels. Around the circumference of the foot they are longest and most widely apart, agreeing in this respect with those which terminate the laminæ in this region. Towards the centre of the sole, and on the plantar cushion, they are finest and closest, and their networks of vessels are consequently less developed. All, including the terminal papillæ of the laminæ, in their natural condition are directed downwards and forwards at about the same angle as the front face of the os pedis.

These various parts of the foot, which may be designated

its "vital appendages," or "tegumentary structures," constitute therefore but one envelope for the bones, tendons, ligaments, and vessels of the organ, and are, as we have seen, almost identical in structure over the whole of its superfices. This envelope may very aptly be compared to a sock, having its upper and inferior aspects furnished with multitudes of beautiful filamentous processes, and between these—around its front and lateral parts—a series of thin, closely-arranged vertical ridges. Everywhere we find the same fundamental elements entering into its composition; and these are essentially identical with those entering into the composition of the cutis or true skin, consisting of a basement membrane, closely surrounding fibrous tissue, blood-vessels, nerves, &c., disposed superficially, either in the form of leaves or papillæ.

This organized envelope has been very properly designated the "keratogenous," or "horn-producing" apparatus of the foot, because from the surface of its basement membrane a solution of epidermic or horn material exudes, which becomes converted (or formifies) into cells, to form the outer casing of the organ, commonly known as the hoof. This latter will now demand our careful attention, as it is the portion of the foot which is most directly concerned in the application of the farrier's art.

TUITION IN OUR VETERINARY SCHOOLS.

By W. Fearnley, V.S., M.R.C.V.S., Leeds.

By the time these few words are read in print the duties of our schools will have commenced, or will be about to commence. I take this opportunity of offering a few suggestions to the teachers of our art and science, trusting that they may receive them in a liberal spirit, and as coming from one who has thought a good deal upon the subject.

Then in the first place let teachers, or rather principals of Colleges, take care that their pupils be not "lectured to death." Whilst this foolish, time-and-patience-wasting custom of profuse lecturing is still practised, we shall have men let at large on the country, disgracing themselves and their adopted profession. When I was a student I had to sit dumb for four and five hours a day to be harangued. I certainly had served an apprenticeship of four years, so that I could better afford it than the majority of my fellow-sufferers. Who will say this was requisite? Was it expected that we

should lay by in our memories all the facts and theories we heard in five hours out of the twenty-four, besides dissecting, patient-visiting, and other important duties? I will not dwell upon the ridiculous spectacle of a man, learned himself in the subject he teaches, coming before his class, and reading written matter which he has himself copied from sources accessible to his students, and which matter will have to be carefully read, perhaps, over and over again by these students before it is impressed on their memories; or it may be that he gives extempore what he knows of the subject. Let him know his subject never so well, and his mode of communicating his knowledge be faultless, he is wasting his time and the time of his hearers, when they have everything he can tell them printed legibly and intelligibly in their text-books.

No man can acquire a knowledge of anatomy elsewhere than in the dissecting-room; of chemistry elsewhere than in the laboratory; of pathology elsewhere than clinically. But some will say that they know men who got their diplomas without dissection, without laboratory instruction, and without clinical instruction. So have I. It would be superfluous and uncalled for on my part to use words in proving that these men did not *know* these subjects, but that their tongues had been trained to speak glibly and knowingly about them. A man who has not dissected carefully can be no better for knowing the course of an artery he is required to tie, when he has not the manipulative dexterity required in tying it. A man who knows the blow-tube test for the substance which he is required to test with the blow-tube, and cannot manipulate the blow-tube, his knowledge of the test is next to worthless to him. A man who has never heard the sounds, who has never seen the sights, and who has never handled certain portions of the body labouring under diseases which present these sounds, sights, &c., can do nothing but draw upon his imagination when hearing them, however graphically described. He cannot apply what he hears in the lecture-room when he enters the sick-box.

Nearly all lecturers I talk to on the subject acknowledge that it is a farce they are actors in, and lament that these absurdities should exist.

Knowledge is for the most part of little value to us as medical men which does not render us capable of performing certain duties. I know lecturers will say that "if we lecture on anatomy, we also demonstrate and dissect the subject with our pupils; if we lecture on experimental chemistry, we also give laboratory instruction; if we lecture on pathology, and

show morbid specimens in the class-room, we also teach clinically."

These things are so, I admit: what I find fault with is the waste of time occupied in harangues. If the subject-matter of our lectures were not plainly and intelligibly written in books for the purpose, but only known perfectly by certain individual lecturers; or if lecturers knew facts and theories not already in print; or if that print were ambiguous and unadoptable by students, then, and then only, would such lectures be justifiable.

An excellent lecturer in our school of medicine told me the other day that "good students did not require lectures, but idle fellows, who would not read for themselves, profited by them."

Since these things are so, however, let me in the name of good students beg of lecturers to spare the infliction in those subjects where they can, and leave them the time to spend more profitably in the dissecting-room, the laboratory, and the sick box. Let me ask the teachers to be with their pupils in these places, and teach them *to do*.

I do not wish to call in question the *use* of our lecture theatres, but their *abuse*.

I am glad that our examinations are to assume a practical form, for this alone will do what is required. As examinations are at present conducted, lecturing and cramming are *just what students require* in order to enable them to pass these examinations. But no one is bold enough to assert that these examinations are tests as to whether a man is or is not qualified to practice the craft. Let our men be trained to be practical veterinary surgeons. Let them be able to show a discriminating public by what they can do *with their hands*, that they know their business. Neither two winters nor three, spent in sitting like dummies, or taking notes, and spending the remainder of the short daylight in commencing and leaving off dissections, hospital visits, &c., can make a man fit to practice as a veterinary surgeon.

The period of study demanded by our examining boards is complained of as being too short; but, if I am right, it is not put to the best use. In all modesty I would suggest that the day's duties commence in earnest by half-past seven in the morning, and that teachers discountenance studies prosecuted after eleven o'clock at night. I think it not right that teachers should spur on all students alike to exertion. Words and threats used to stir up an idler, frequently have the effect of frightening a worker to read himself silly.

In the next place I am at a loss to know why we require

a student to attend two winters' lectures on chemistry (theoretical), when students of the higher branch of medicine are only required to attend one winter course of lectures on this subject. The summer between the two winter sessions might with advantage be used in teaching practical chemistry and veterinary materia medica, and such subjects as could be taught in summer, so as to relieve the winter sessions. I am strongly disposed to think that a vast amount of good work could be done in two winters and a longer summer sessions, provided intelligent students presented themselves (who had been with a practitioner for a couple of years), and the time at college not so much taken up with superfluous lectures.

As I have before said, the court of examiners can rectify whatever is wrong in our system of tuition; for if students are required to *do* the things, which it is now only necessary that they should be able to *tell* how they are *to be done* in order to get the diploma, their teachers would, with ease and advantage change the present system, and we should then have good, thorough-going veterinary surgeons sent out of our colleges.

[We publish Mr. Fearnley's paper *verbatim et literatim* to avoid the risk of misstating his views; but we deem it right to express our conviction that his strictures on the system of tuition by aid of lectures are far too sweeping. He surely does not mean what he states, namely, that, "let him (the lecturer) know his subject never so well, and his mode of communicating his knowledge be faultless, he is wasting his time and the time of his hearers, when they have everything he can tell them printed legibly and intelligible in their text books." Can Mr. Fearnley refer us to the text-books which contain all that a lecturer well acquainted with the subject of medical or veterinary science can tell his pupils?]

ANÆMIA IN BEASTS.

By James Macer, M.R.C.V.S.L., Somersham, Hunts.

In conjunction with Mr. Hill, student of the Royal Veterinary College, I was requested to examine a herd of beasts twenty in number, the ages of which would average about two years.

Previous to our seeing them on July 26th they had been

attended by an unqualified practitioner, who had administered purgative agents—which, in my opinion, was adding fuel to the fire, as four of them had died, and two more were in such an emaciated condition that they died a few days afterwards.

From the owner I elicited the following particulars concerning them. In the early part of the summer they were turned out (in good condition) into a lowly situated meadow, having a brook with a sandy bed running through it. As the weather became hot and the flies troublesome (for a greater number has not been known for some years past) these beasts would stand in the water for hours together during the day, their excretions becoming deposited in it, and from their constantly moving about, and thus stirring up the bed, when they drank they would necessarily take large quantities of organic and inorganic matter into their stomachs. This I consider to be the primary cause of the disease, as prior to this they had done well, but now commenced to fall off in condition.

When first brought under our observation, the following indications of disease were apparent: The animals were in an extremely emaciated condition, with a staring coat and harsh tense skin; diarrhœa existed to a considerable extent, the fæces being of a very offensive character; the appetite was poor, and rumination suspended; the tongue, buccal, conjunctival and nasal membranes were pallid, and also exhibited a slight yellow tinge; the pulse was quick, weak, and irregular, and easily increased in frequency by excitement; the joints, more particularly the carpus and tarsus, were in an œdematous condition, and some of the beasts had an opaque condition of the cornea.

We made a *post-mortem* examination of one of the dead beasts, which made patent the following appearances; but it being late in the evening we could but do so in a very imperfect manner. Proceeding to inspect the thoracic viscera, we found the heart healthy, as was the left lung, but one lobe of the right lung evidenced marks of disease, exhibiting a marbled condition greatly resembling the morbid appearances of pleuro-pneumonia; but during life I detected no respiratory murmur or the husky cough which are the known accompaniments of this affection. The rumen, reticulum, and omasum were apparently healthy, but the tissues of the abomasum were evidently weak and flabby, as were the coats of the intestines. Portions of the liver were softened, and darker in colour than natural, and easily broken up. The spleen was in a remarkable atrophied condition, being comparatively dried up, and externally of a dirty white colour.

The remedial measures adopted were as follows: The animals were removed to a sheltered and well littered yard, and put on nutritious food, with flour gruel to drink. Ferri Sulphas in combination with gruel and Zingib. was prescribed, the two latter agents to give increased tone to the stomach, and the iron with a view to augment the number of red cells in the impoverished blood. Under this treatment our patients quickly rallied, the diarrhœa being stayed, and the appetite returning, with other favorable appearances.

We saw the animals from time to time, but not since August 19th, when they were fast gaining strength, and since then the owner has informed me that they had entirely recovered.

I consider this to be a well-marked case of anæmia, arising out of long-continued diarrhœa, caused by the animals partaking of the sand, &c., as before mentioned, and further aggravated by the exhibition of purgative medicine, the long drought and scarcity of keep, no doubt, playing their share in the production of the derangement, the heart's action becoming enfeebled by the scanty supply of blood which would be minus some of its vitality, resulting in loss of tonicity to the coats of the arteries. We can, in the same measure, account for the viscera becoming affected, no doubt resulting upon congestion in the first instance.

Portions of the viscera were sent to the College for the inspection of Assistant-Professor Axe, who also considered this to be the nature of the disease.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 680.)

The Gramminaceæ.

The natural order to which grasses and their allies belong is so important to man and the animals under his care, that they may well form a subject for many volumes; we may, therefore, be excused if, leaving out the discussion of their structure, we devote the present chapter to a few notes on their economical bearing.

Grasses form an exceedingly natural group of plants; at the same time they afford considerable variations of structure, *e. g.* the floral organs differ in their parts and their positions, for while a few have separate and distinct flowers for their seed-

ing or female parts, and distinct stamens or male organs, others have complete flowers. Indian corn is an example of the first, and the greater part of our meadow grasses are represented by the second.

Again the seeds of some grasses are so small, that they are of little economic value, except as being capable of reproducing the plant; while others are grown principally for the enlarged grain, which, containing a quantity of starch and nitrogen, are grown for their seeds, which is termed corn or grain. In America maize is only called corn, while the corn of the English farmer is individually called by its name of wheat, oats, barley, &c., whilst everywhere the farmer considers even peas and beans as corn crops, on the principle that they are grown for their seeds alone.

This shows us clearly that, with reference to grasses, two great divisions must be understood at starting; these by common consent have been distinguished as follows:

1. *Cereal Grasses.*—Those grown principally for their seeds.

2. *Pasture Grasses.*—Those grown mostly for their herbage.

I. Cereal Grasses.—As these are said to be the gift of the pagan goddess Ceres, we may, at starting, be prepared for some degree of hesitation as to their origin. They are very ancient, and have, indeed, been known to man from the very earliest times. Thus the tombs of Egypt have revealed to us the presence of wheat, differing little, if any, from that of the present day. Nay, a sort of wheat is known to agriculture called "mummy wheat," which has been said to have been resuscitated from some grain found in the ancient tombs. This, however, is more than doubtful; but the very assertion points to the fact that a sort not before known may suddenly appear amongst us, and there is every reason to believe that this very mummy-wheat, as also the new sorts continually arising, is due to the plastic element which this and other grain contains, and which, paradoxical as it may appear, has been the cause of wheat, however changed and changing, still presenting to us a grain which all can recognise and understand.

There have been those who have concluded that wheat and other grain was given to man in the forms in which we find them; in other words, that they were originally created in the present cultivated forms, differing, of course, but only in varieties. Our own opinion is that all grain is derivative, —all sorts have been developed from a wild form of grass; and that it was that capability of growing a larger seed, and

being adapted to submit to cultivative processes that has developed the corn, which we refer to the beneficent intervention of Ceres, and for which the moderns may well feel thankful to an all-wise Providence, in that He has endowed it with those properties.

Now, this is not a useless discussion, inasmuch as it seems to us that a due estimate of the nature and objects of these very cultivative processes are all-important in aiding in the successful growth of corn at the present moment—facts which will come out the more clearly in discussing the nature, origin, uses, and cultivation of the following sorts of cereal or corn grasses:

	ORIGIN.
Wheat	*Ægilops ovata.*
Barley	Very doubtful.
Rye	*Secale cereale.*
Oats	*Avena fatua et strigosa.*
Indian Corn (Maize) . . .	*Zea Mais.*
Rice	*Oryza sativa.*
Millet	*Sorghum.*

Wheat has nowhere been found as such in the wild state; but the experiments of M. Fabre, detailed in the *Journal of the Royal Agricultural Society*, abundantly show that this cereal was derived from a wild grass, at first sight differing widely from wheat. Many botanists had arrived at these or kindred views from observation and reasoning upon the subject; but it was not until a comparatively recent period that we possessed any direct evidence derived from experiment. This we now have, and upon it we quote the following passage from Mr. Bentham's article, "Triticum," in the *Cyclopædia of Agriculture:*

"It was never contended that their original types have become extinct, and various, therefore, have been the conjectures as to the transformations they may have successively undergone, and as no accidental returns towards primitive forms have been observed, we have till lately had but little to guide us in these vague surmises. Within the last few years, however, the experiments and observations of M. Esprit Fabre, of Agde, in the South of France, seem to prove a fact which had been more than once suggested, almost always scouted, that our agricultural wheats are cultivated varieties of a set of grasses common in the South of Europe, which botanists have uniformly regarded as belonging to a different genus, namely, *Ægilops.*

"The principal characters by which the latter genus had been distinguished consisted in the greater fragility of the ear, and in the glumes, *i. e.* the chaff-scales being generally

terminated by three or four, and the poles by two or three points or awns—beards.

"M. Fabre has shown how readily these characters become modified by cultivation; and wide as is the apparent difference between *Ægilops ovata* and common wheat, he has practically proved their botanical identity; for from the seeds of the Ægilops, first sown in 1838, carefully raised in a garden soil, and resown every year from the produce he had through successive transformations by the eighth year (1846), obtained crops of real wheat, as good as the generality of those cultivated in his neighbourhood."

Impressed with these views, we repeated these experiments on the Cotteswolds, and after some years, namely, from 1855 to 1859 we obtained some very satisfactory results, which were much aided by the warm summer of the latter year. These experiments were rudely put an end to; but they were sufficient to assure us that wheat is not a species of Triticum at all, but is really derived from Ægilops. The behaviour of the kind of wheat known as Talavera will often make evident that peculiar fragility of ear mentioned by Mr. Bentham, and which we found to be a characteristic of Ægilops, but which lessened by cultivation. This Talavera was grown by us this year, and a bit of it, not being harvested until over ripe, became exceedingly brittle.

Of course the matter of the presence or absence of awns must be of a very uncertain character, and even in a bearded sample some ears will occur in which the awns are scarcely shown; thus we have by us some April wheat whose awns are usually as long as those of barley, almost devoid of awn, and this year we grew some Essex white wheat, a variety remarkable for the absence of awns, with these appendages as much as three inches in length.

These facts about wheat are not merely of curious interest, but they have a very important practical bearing. If we view the wheat plant as a derivative, we shall be at no loss in understanding how the vast number of varieties have been brought about—varieties applicable to a wide range of climatal conditions, and the ease with which new forms can be brought about by hybridization and selection is a matter of importance, because older varieties too often repeated are apt to degenerate, both in quality of grain and quantity of crop.

But when we speak of acclimatizing wheat, we think it would be excessively difficult to make any existing form grow well in a climate not congenial to it, though it might be

easy to arrive at a new variety possessing some desired quality.

We believe, however, that it is not difficult to alter a climate to suit a sort, and in all probability this at the present day much misused term of *acclimatization* simply means no more than making our cultivation and climate accord as nearly as possible to the habits of the plant or animal to be entertained under new conditions.

Thus when we see the finer white wheats growing good crops on farms where such would have been impossible a few years ago, we are hardly to conclude that we have at length got this more delicate sort to become more hardy; but the climate has been ameliorated by draining and better cultivation. We distinctly remember when the lias clays could scarcely be made to grow a good crop, even of some of the hardier sorts of red wheat, the common coarse cone wheat, with its long awns being the sort generally grown.

This was succeeded by many sorts of red wheat, and now only the best cultivated lias farms produce white wheats. On our own farm good roots and a generous system of farming have made good crops of white wheats the rule when even red was at one time very precarious. These are facts which will be more strongly urged when we consider the derivation of other kinds of grain; but for the present we will be content with the expression of a belief that wheat as a cereal grain is derived by cultivation from a wild grass, and it is due to the effects of cultivation that we have so many sorts with such variable adaptability, and further the general success of newer sorts over older ones is that they are fresh to the land, and so get, as it were, a fresh run of those changes by which their differences have been induced.

REMARKS UPON THE USE OF ACTUAL CAUTERY AS APPLYING TO THE VETERINARY PROFESSION.

By J. W. Hill, M.R.C.V.S.L., Wolverhampton.

I was rather astonished, on perusing *The Veterinarian* of July last, to observe, in some remarks upon the use of the actual cautery, doctrines set forth that I certainly thought belonged only to the past. Under the head of rules in that

article on the method of firing, I read, much to my surprise, that in cases of ringbone, ossified cartilage, quittor, farcy, thick legs, &c., the writer fired to the depth of an inch—deep indeed, and I should say deeply overdone. Surely, if sloughing of the parts and permanent blemish were to be dreaded at all after the application of the actual cautery, it would be in inch-deep firing. Will practical experience elsewhere, even of 30 years' standing, bear out such testimony? Is it, I ask, in accordance with the teaching of the present day? I venture to say, No. We fire for what? To effect, if possible, a cure, the operation acting as follows:—By applying the heated iron to the surface of the part affected, we may be said to produce (as Mr. Wilson says), a greater inflammation than that existing in the diseased part; and as two inflammations cannot go on together with the same strength, so this greater inflammation prevents to a certain extent the action of the lesser, and consequently the further growth of the diseased structure. But would this be the case in firing to the depth of an inch? Take ringbone for example. By going to such an outrageous depth, we should bury the cautery-iron in the very substance of the diseased structure, and thereby increase instead of diminish the inflammatory action existing in the part; and surely if sloughing might not be expected to follow such an operation as that, then I think we may give up our fears of it ever taking place in connection with the use of actual cautery.

Secondly, we look forward to the operation producing a bandage (and, I contend, a permanent one), giving support to the affected part and its surrounding tissues, and when this has taken place, then we have done all that is necessary as far as the use of the firing-iron is concerned. Cutaneous firing, if I may so express myself, is, I consider, all that is required in bony or bursal enlargements, sprained tendons, and thick legs; and never would I in any one case intentionally divide the skin. But exceedingly more surprised was I to find in the article in question, that 30 years' experience still advocated that most barbarous of all practices, firing for "lampas," an operation cruel as it is needless, an operation that every member of our profession should look upon as ignominious to his calling. If ever the intervention of the Society for the Prevention of Cruelty to Animals is necessary, it would be in such a case as this, which is more severe, equally absurd, and infinitely more cruel, than the operation of cutting dogs' tails or docking horses; these are instantaneous operations, while the other is one of slow and useless torture, reflecting unquestionably discredit upon the operator,

and the profession at large. I have always found that "lampas" will give way to the use of the lancet, and feeding the animal for a few days upon soft food, the disease being merely an irritated and highly vascular condition of the parts, consequent upon the changing in young horses of the teeth. The same treatment will apply to aged ones in which we sometimes see the affection; and how much better are simple measures like these, than following up the practice of the farrier and blacksmith of old. The day is long distant when the veterinary surgeon will be able to lay aside the firing-iron, yet, though used with such excellent results, let us not abuse it. Truly the use and method of applying the actual cautery need discussion, and so little having been said about the subject lately in our journal, must be my excuse for taking it up now.

REMARKS ON SOME OF THE CAUSES OF THE SPREAD OF THE FOOT AND MOUTH DISEASE IN IRELAND.

By Observer.

As a reader of your journal, I have noticed that from time to time you have complained of the inefficiency of the course adopted by the local authority in the several counties of England to arrest the progress of the "foot and mouth disease."

In Ireland we are no better off, and it would appear that in both countries the very excellent measures which have recently passed the legislature are likely, at least in so far as this disease is concerned, to become dead letters, and pretty much from the same cause.

It cannot be said that the Irish Government is inactive, but its efforts receive little or no support from the local magistracy.

The *Irish Farmers' Gazette* of September 17th says that: "We have made strict inquiries into the complaint of a 'Limerick Farmer;' that the government was taking no steps to arrest the progress of infectious diseases, and find "that so far from the government being inactive in this respect that on the 1st instant there were 387 farms in the county of Limerick, 140 in the county of Tipperary, and 133 in Cork under stringent regulations on account of some of the animals on them being affected with 'foot and mouth disease' alone; besides which there are farms under restrictions in the counties of Dublin, Kilkenny, Kildare, King's County, Meath, Wexford, Wicklow, Clare, Waterford, Galway, Ros-

common, and Antrim, in all amounting to 905 farms, lands, premises, or places. This certainly evinces a state of things decidedly opposed to inactivity."

Rightly enough also the *Gazette* adds, "The rapid spread of the foot and mouth disease in the south and west of Ireland is certainly not attributable to any negligence of the government, or want of activity on the part of the police, or any other officials; but to the sympathy for offenders against Council Orders prohibiting the unrestricted movement of infectiously or contagiously diseased cattle evinced by the magistrates before whom they are prosecuted in some localities, many of whom, as well as their tenantry, are themselves cattle traders."

These extracts will help to give you some idea of the state of things here, and I fear that Irish stock owners will never recognise the necessity of acting in accordance with Council Orders until, as a result of English Privy Council interference, seizures of cattle shall have been made at the ports of their debarkation in Great Britain in consequence of their arrival from Ireland in a diseased state. The establishment of portal inspection of cattle about to be sent from Ireland would not, in my opinion, cause a readier or more extensive compliance with Irish Council Orders, except within the Dublin Metropolitan Police District, which includes the port of Dublin, and is the only part of Ireland in which the magistracy have been found to do their duty with respect to cases of cattle disease.

In other ports, during the years of portal-inspection, the magistrates were found to only fine persons in the nominal penalty of one shilling for exporting animals to England without a certificate of health. In one case thus decided at Drogheda it was subsequently ascertained that the men on the bench were the principal shareholders in the steam-ships in which the animals had been exported, and were also cattle traders themselves. Another case in point occurred at Ballinasloe as recently as September 10th. The constabulary summoned a person to the petty sessions for concealing the existence of the foot and mouth disease, instead of reporting the outbreak to the police. The offence was clearly proved, and although an aggravated one, and unattended by any mitigating circumstances, the magistrates only imposed a *nominal fine of one penny*, and one shilling costs.

Ballinasloe fair, which is the largest stock fair in Ireland, and probably in the United Kingdom, will be held on the 4th proximo. No doubt it will be carefully supervised, but it may be doubted whether any good will arise from the strictest supervision and detection of disease in a place where

the magistrates are so opposed to government interference, and where the chairman of the bench is the owner of the fair-tolls and the chief landlord in the locality.

Indeed, I see no remedy for the state of things existing in Ireland except that of the Lords of the Privy Council placing the cattle imports into England from this country under the same regulations as those from foreign countries. This, doubtless, would be a severe measure, and would be much opposed, but in a few weeks its good effects would be observable throughout the United Kingdom. It is now too late to seek an alteration in the Irish Cattle Diseases Act, but it is much to be regretted that power was ever given to the magistracy to inflict a less fine than five pounds in all cases of a direct violation of its provisions.

Strong measures can alone overcome great evils.

Pathological Contributions.

CATTLE PLAGUE.

Since the publication of our last number, the cattle plague has not only been introduced from Eastern into Central and Western Europe, but has followed the Prussian army as far into France as Bar-le-Duc, if not still nearer to the walls of Paris. Great alarm has necessarily been created for fear the plague should find a footing in Great Britain, and our Leader and also the Orders of Council, which we publish elsewhere, will explain very much of the risk which is incurred, and the precautions which have been taken.

From Berlin we learn that the plague exists to a serious extent between that city and Dresden, being chiefly prevalent in the province of Liegnitz. It has also broken out at Frieberg, Meissenberg, and near Glauchau in Saxony, as well as at Dresden, in which place it has attacked the dairy cows.

From Prussia the plague has likewise extended to Pomerania, having shown itself in the district around Stralsund, and, according to some accounts, also in the town of Schwerin, in Mecklenburg.

Following the wake of the army, we have information of outbreaks of the plague at Ingelheim, in Hesse-Darmstadt, where a third part of the cattle have already been destroyed.

In the Palatinate of Bavaria, Landau, Kaiserslautern, and Bergzebern are centres of the infection, no less than fifteen parishes around the latter place being the seat of the plague. The disease also prevails at Ottweiler, St. Wandel, Simmern, and Saarbrück, in Rhenish Prussia; Mannheim, in Baden; and Mundelsheim, in Würtemberg. Besides this wide diffusion of the malady, Alsace and Lorraine are overrun with it to a great extent, the latest intelligence naming Sarreguemines and Gravelotte and the Franco-Swiss frontier as strongholds of the infection. At Gravelotte several hundred of cattle have been killed, but the extent of the disease, and the scarcity of troops for sanitary purposes prevent military *cordons* being drawn around the infected places. Other information is to the effect that the disease exists along the whole of the "Etapen road," but only in a sporadic form.

The report that the plague had entered Holland, and shown itself at Soeterwoude, near Leyden, is not correct, the death of the cattle in that place being due to entirely a different cause.

While the plague is thus devastating countries so near home, it is no less active in Eastern Europe. To prevent its reintroduction into East Prussia, cattle importation from Poland by way of Eydtkuhnen, on the Kovno railway, is prohibited. Galicia, and Transylvania still continue the seat of the disease, the Comitat of Hunyad being its chief centre in the latter-named country.

Eleven Communes in Roumania are also infected, besides many others in contiguous Turkish provinces. The plague is likewise extending its ravages along the Asiatic shore of the Black Sea, and in the maritime districts around Trebizond.

PLEURO-PNEUMONIA.

Since the publication of our last number pleuro-pneumonia has undergone very little alteration either in the number of animals affected, or in the centres of the infection. Thirty-eight counties in Great Britain are the seat of this disease, and in these 158 centres of infection exist. Fourteen infected places are reported from Norfolk, and nine fresh out-breaks. Nineteen centres of the disease exist in Renfrew, and thirteen in Fife. In the town dairies the malady is still very rife, and in the vicinity of Dublin, the losses are described as being unusually heavy.

FOOT AND MOUTH DISEASE.

We have again to report an increase in the spread of the foot and mouth disease. The malady prevails in forty-five counties of England and Wales, and ten in Scotland. The largest number of infected places are reported from Cheshire, Cumberland, Dorsetshire, Lancashire, Somersetshire, Staffordshire and Yorkshire; the total number of centres of infection being nearly 4000. In Ireland also the disease is spreading, more especially in those districts where opposition is offered to the enforcement of the provisions of the law. It would appear, however, that in some of the English counties the local authority is about to adopt more active means to check the spread of the disease. In Dorsetshire a desire has been expressed, that steps be taken to stop the fairs and markets.

SHEEP-POX.

The intelligence received from the Continent relative to the sheep-pox, shows that this malady is on the increase, more especially in northern Europe. The reports which appeared in many of the papers relative to an outbreak of the disease in Friesland proved to be correct so far as the mere existence of the malady in that country is concerned. The inquiries which have been made show that the sheep-pox was present on one farm only, and that no fear of its spread from this centre was apprehended. The difficulties which are now unfortunately in the way of a rigorous adoption of sanitary regulations on the Continent with regard to this and other contagious diseases of animals, will probably lead to a further extension of the sheep-pox, more especially in those countries which constitute the North German Confederation.

SPLENIC APOPLEXY.

The fatal blood-disease ordinarily known as splenic apoplexy has been unusually rife during this summer, more especially within the last few weeks. Cases of this kind used to be heard of only now and then, and at long intervals of time; but it would now appear that the malady is making fearful progress. Communications detailing outbreaks of the disease, in some of which not only cattle, but sheep, pigs, and even horses, have died suddenly and without premonitory

symptoms, have reached us from counties the most distant from each other, and from localities where the greatest possible differences exist in the prevailing breed of cattle, character of soil, system of farming, &c. It would thus appear that the causes of this disease, be they what they may, are on the increase, and consequently it behoves the members of the profession to make the most searching investigations in each separate outbreak. In one case which occurred in Staffordshire it would seem that a relationship—as cause and effect—existed between the feeding of the cattle on land irrigated with town sewage and the outbreak of the disease; but in numerous other cases of the most severe kind, the closest investigations have failed to show that the slightest exposure of the cattle to either vegetable or animal matter in a state of decomposition had taken place. It is evident that an accumulation of facts must be one of the first things attained, and we rely on our readers to furnish these for publication in our journal, with a view to a searching inquiry being made into the pathology and causes of splenic apoplexy.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of August, 1870, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Honfleur .	Little-hampton	Foot-and-Mouth .	2	...	...	...	2	2
	Total ...		2	...	...	...	2	2

"ALEXANDER WILLIAMS,
" Privy Council Office, Secretary.
" Veterinary Department, 12th September, 1870."

Facts and Observations.

Influence of Magnets on Animals.—In the April number of the *American Psychological Journal* there is an extremely interesting paper by Dr. John Vansant, describing the results of several curious experiments with magnets on animals and plants. Dr. Vansant's attention was first particularly directed to the subject of this communication in the winter of 1866, when he observed that a small magnetized steel rod, the *ends of which were finely pointed,* if brought carefully in contact with an exquisitely sensitive blister, that had been accidentally produced on one of his fingers by pinching it, gave rise, when the southward pole was applied to a momentary sharp sensation, and seemed to cause the blister to be more painful after the magnet was removed. When the northward pole was used in the same way, no sensation could be felt at the moment of contact, and after removal the original pain remarkably subsided. Struck by this phenomenon, and yet almost doubting his own sensations, he proceeded to inquire if it were possible to recognise a difference between the two ends of the magnet by means of some organ peculiarly sensitive in its normal condition. On trial, he found that the conjunctival membrane of the eye would indicate by the feeling which pole it was touched with. He could lay with care the sharpened northward end of the magnetic rod on that membrane without pain or winking; but the instant the southward pole was applied, no matter with how much delicacy, there was a sharp sensation and an involuntary slight closing of the eyelid. The effect was faint, but plain. This experiment was repeated on the eye of another person, the same day, with similar results. After this he made numerous experiments with magnets of different forms and powers (though not at any time with very large ones) applied to various parts of the body, and thought he observed a definite set of symptoms arise after every application in the same manner to a given part, provided sufficient time had elapsed between the applications. The author then details several curious experiments, which some of our readers would do well to repeat.—*Popular Science Review.*

A New Theory of Nervous Sensation.—The *Chemical News* gives a report of a recent meeting of the Royal Irish Academy at which a paper was read by Dr. Robert M'Donnell on the above subject. The author's paper might be briefly described as an application of a theory similar to the wave theory of light to the propagation of sensation along the nerves. He compared this "undulatory"

theory of nervous conduction with the hitherto more generally received hypothesis of distinct nerve-conductors, supposed to exist for each kind of sensation, pain, heat, tickling, &c., and attempted to point out that the former is at once a simple hypothesis, and more in harmony with the ideas now prevalent as to the propagation of light, heat, electricity, &c. The author also dwelt upon many points of analogy between the absorption or interception of waves of heat or of light, and the somewhat similar phenomena as regards nerve-conduction where one kind of sensation is felt and another ceases to be any longer perceived, as in cases where the patient feels the contact of the hand, but cannot distinguish heat, or *vice versâ*.—*Ibid.*

Regeneration of Bone by Periosteum.—M. Ollier's recently reported cases seem to prove the fact of regeneration of the bones through the periosteum. The two cases died, but a sufficient time after the operation to show the advantages of the remedy. Both were cases of resection of the elbow-joint. One died eighteen months and the other a year after the operation.—*The Monthly Microscopical Journal.*

Decrease in the Importation of Wool into Liverpool.—According to returns just made, it appears that during the month of July last, there were imported into Liverpool the following quantities of sheep's wool, namely :—From the East Indies, 1969 bales; from Spain, 1 bale; from Portugal, 277 bales; from Peru and Chili, 5191 bales; from the River Plate, 410 bales; from the Mediterranean, 2196 bales; and sundries, 52 bales—making a total of 10,076 bales. There were also imported 200 bales of alpaca, and 2373 bales of goats' wool. During the seven months ending July, there were imported from Australia 1918 bales of sheep's wool; from the Cape of Good Hope, 34 bales; from the East Indies, 16,369 bales; from Spain, 82 bales; from Portugal, 4494 bales; from Peru and Chili, 21,078 bales; from the River Plate, 4871 bales; from the Mediterranean, 6729 bales; from the United States, 53 bales; and sundries, 139 bales. There were also imported during the same period, 15,503 bales of alpaca, and 7518 bales of goats' wool—making a total for the seven months of 78,788 bales, which, when compared with the corresponding period of last year, show a decrease of 20,042 bales.—*Journal of the Society of Arts.*

The Hog Crop of 1870.—The first estimate of the probable number of hogs available for slaughter in the packing season of 1870-71, is furnished by the official tables of the State Auditor of Ohio, the assessors of the State returning the

gross number six months old and over, on the 1st day of April, at 1,720,113, against 1,455,943 on the corresponding date of 1869, or an increase in round numbers of 275,000. There is, however, a slight decrease as compared with 1868, a deficiency of over 300,000 as compared with 1867, and a still greater falling-off as compared with the crop of previous years, which reached the maximum of 2,765,900 in 1863. It is evident that the same causes which led to the large product of 1863—high price of the packed product and consequent profit to breeders—have stimulated the production this year in Ohio, as it has probably in Illinois; but it is questionable if the increase is equal in other Western States. Upon the subject of possible values the *Cincinnati Gazette*, from which we have extracted the above figures, says:—"The returns to the Auditor include only those over six months old on the 1st of April. Large numbers, therefore, not included in our figures, may be made ready for market by January next. A good corn-crop and high prices for hogs usually insure a large surplus of the latter. Hogs are commanding high prices, and, while it is not likely that packers will be able to pay as much as was realised last winter, still, if corn yields as well as it promises, farmers will find hogs more profitable than any other product. They cannot get so many hogs ready for market as to put the price below a paying point. Those who buy stock hogs at high prices to fatten well run the risk of losing money, of course, but farmers who raise hogs and fatten them cannot fail to come out ahead. Packers now think they can afford to pay 8 dols. per 100 lb. net, as the average for hogs next winter. Upon this it will, we think, be safe for feeders to figure; and 16 dols. to 20 dols. per head for hogs as matters now stand, and are likely to stand, should insure a good profit"

Foreign Cattle Market and the Trade in Meat.—The *Times* says that it is understood that the City Markets' Committee has entered into an agreement to purchase twenty-two acres of the site of the Deptford Dockyard for the proposed Foreign Cattle Market. Other reports are to the effect that the market will be established on the north side of the Thames, where greater facilities will be afforded for properly carrying on the trade.

It is also said that an association of butchers has been formed at Sheffield, in connection with the Lancashire and Yorkshire Butchers' Union, *to endeavour to have the restrictions upon the importation of cattle removed.* It is stated that meat is 15 per cent. cheaper in London than in the north.

THE VETERINARIAN, OCTOBER 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

CATTLE PLAGUE ON THE CONTINENT.

MONTH after month we have had to record the progress of the *rinderpest* in Poland, Galicia, Transylvania, Hungary, Podolia, and other adjacent countries. The pest is near its home in those regions, but beyond the interest which the subject may be presumed to have for the scientific pathologist, there is probably very little importance attached by the general public to the intelligence of the spread of an infectious disease among cattle in countries which do not directly supply us with animal food.

Germany is the country through which cattle from infected provinces have to pass in order to reach a shipping port, and Western Europe relies chiefly on the perfect system of *cordons* which Prussia, as the head of the North German Confederation, establishes when cattle plague approaches the frontiers. So long, then, as these States remain free from the disease, all importing or transmitting countries lying westward of them rest in comparative peace; but cattle plague in Germany is a source of real danger to all the rest of Europe.

As a matter of history it is known that the cattle plague follows the course of armies in times of war. It is not true, however, that there is sufficient in the defective sanitary arrangements of camp life to produce a specific disease, although there is enough to foster and propagate the malady when it occurs. The virus must first of all be introduced, or whatever other form of death may arise from the unsanitary conditions in which the animals are placed, it will not be death from cattle plague.

There is no mystery to unravel in reference to the origin of the present outbreak of cattle plague in Germany. The disease existed in permanence at a possible distance, and it only required that the country which protects itself by an incessant watching of its frontier should have its attention

diverted to other things, to insure all the disaster which has recently happened.

Report attributes the introduction of the plague to Podolian, or Steppe, cattle; but it is at least as probable that Polish or Galician cattle first carried the malady to Berlin, and it is tolerably certain that it was early propagated from that centre by cattle of various breeds.

The disease was not detected until some of the infected cattle had been distributed, and although immediate steps were taken to trace animals which it was suspected would carry the disease, the attempt was only partially successful.

Schwerin and Stralsund were said to have soon become infected, but this report has not been confirmed, in so far as the first named place is concerned. Saxony, however, was quickly invaded by the disease, then the Palatinate, and lastly France. Accounts which reach this country are somewhat vague in detail, but there is no doubt that the cattle plague has spread over a large extent of country in Saxony, Rhenish-Prussia, Bavaria, and France, to say nothing of its progress in the more Eastern provinces, which usually suffer more or less from the malady. The extent of the area over which the plague has advanced is less a subject for surprize than the wonderful speed of its progress.

Under ordinary circumstances, the rapid spread of the disease would have excited profound alarm and attracted universal attention; but now that the lives of thousands of human beings, and the fate of nations are in question, the devastations of the cattle plague are only alluded to by many persons as among the contingencies of war.

Holland and Belgium, as being near to the centres of infection, have done all that is possible to prevent the entrance of infected animals by closing their frontiers to cattle, sheep, goats, hides, &c., from Germany and France, and up to this time the precaution has been effectual. An outbreak of the disease was said to have occurred at Soeterwoude, near Leyden, in Holland, but the report was afterwards officially contradicted.

England has established restrictions which are in some respects even more stringent than those which were

enforced during the prevalence of the cattle plague in 1865-6, but in the presence of a risk so imminent as that which now threatens her no restrictions can be considered too severe. The Orders of Council which were passed on September 9th and September the 20th, and which we publish in the present number, provide for the slaughter at the place of landing of all cattle, sheep, and goats brought to Great Britain from any port of France, or from any port of the States of the North German Confederation; and in the port of London, French and German animals cannot be landed at all, unless a proper place is provided for their exclusive reception, in which they are to be kept, and out of which they cannot be moved alive.

Owing to the movement of cattle from the Metropolitan Market to various slaughter-houses in the metropolitan area, there was danger, so long as French and German animals were allowed to enter the market, of an outbreak of the cattle plague in London. Judging from the experience obtained on two or three occasions of the kind, this might not have been attended with an extension of the plague beyond the metropolis; nevertheless the risk was so great as to justify the use of very strong measures to prevent it.

Notwithstanding every care, cattle plague may still find its way into this country, and it is desirable that the members of the profession should be on the alert. It is a source of much regret that we cannot rely with any satisfaction upon the system of inspection as it is now very generally carried out in England. Taking a common-sense view of the Act of 1869, it appeared to us to provide for an emergency by rendering it incumbent on Local Authorities to appoint at least one veterinary surgeon, as an inspector in every district. Veterinary surgeons, however, instead of being appointed, are superseded by policemen; and should cattle plague again appear among our herds all the work of organization, which caused so much delay before, would have to be done again and under considerable disadvantage, while in the mean time the infection of cattle plague would be diffused far and wide.

Extracts from British and Foreign Journals.

PLAIN TRUTH TO MEDICAL STUDENTS.

The medical student of 1870 enters upon a career beset with difficulties but studded with rewards. The heir of centuries of research and devotion, he has to bear the weight of responsibilities ever increasing, and to uphold a standard which must be borne yet higher, and over steep and difficult paths. A higher national standard of education requires that he shall bring to his special studies the culture befitting a liberal profession; and the increasing application of exact modes of diagnosis and research in treatment demands, at his hands, an acquaintance with branches of science collateral to medicine, formerly not generally required. On this subject it is right to speak very plainly. Notwithstanding improvements in the standard of preliminary educational requirements, our licensing bodies are perforce at this moment with a second-rate standard of mere schoolboy acquirements, which is by no means equal to the just demands of medical science, and which affords a very insufficient guarantee for the future of our profession in this country. The lamentable mediocrity of preliminary acquirements which they accept is the real hindrance to the progress of medicine as a science in this country. It is unnecessary to dissimulate the truth. The miserable inferiority in scientific research, the dearth of original work, the want of exactness, the poverty of physiological investigation, the ignorant impatience of "unpractical detail" which we all have to deplore so much in the mass of professional work at this day are due to the inadequate preliminary cultivation of our students, to their defective training in scientific method, the small base on which the pyramid of medical lore is made to stand. The solemn deprecation of excessive devotion to microscopic research; the empty sneer at chemical physic; the idle and mischievous disregard of instruments of precision — the sphygmograph, the thermometer, the laryngoscope, the ophthalmoscope—are all the expressions of a Philistine ignorance. There is one enemy against which the English student needs to be earnestly cautioned—it is what he calls his "common sense." It is almost as dangerous at the outset as that nondescript cloak of contented ignorance which often makes him in after life an enemy to science and a danger to mankind, and which he then calls his "experience." As a

student, we beseech him to trust to nothing but hard-going laborious cultivated research and study. He cannot be too earnestly warned to fit himself for his work by a thorough mathematical training, by a sound knowledge of languages, by real mental discipline acquired in a working devotion to natural science. It is on this basis that he must build his clinical aptitude and judgment. The inferority of English to German medicine is due to this inferiority of preliminary training. We earnestly counsel all students into whose hands these pages will fall to ask themselves how far they are fitted to undertake the career which they are about to enter. If we could persuade nine-tenths of them to pause yet a year or two, and to devote that time to a more thorough mental culture and preliminary scientific training, we should render an inestimable service to them, and materially improve the prospects of British Medicine.—*British Medical Journal.*

REGULATIONS RELATING TO THE LANDING AND INSPECTION OF FOREIGN ANIMALS ARRIVING AT PORTS IN GREAT BRITAIN.

[The following regulations relate to the landing of foreign animals under ordinary circumstances:]

Marking.

Each kind of foreign animal landed at a landing place for slaughter, (with the exception of sheep and swine landed within a defined part of the Port of London,) shall be marked in the following manner, namely:—

Cattle. By clipping the hair off the end of the tail, and by clipping a broad arrow, about five inches long, on the left quarter.

Sheep and Goats. By clipping a broad arrow, about four inches long, on the forehead.

Swine. By printing a broad arrow, about three inches long, on the left side, with the following composition, namely:—

Rosin, five parts, oil of turpentine, two parts, and red ochre one part; melted, and used warm.

Detention.

All foreign animals landed in Great Britain, shall be detained for at least twelve hours after landing, except as hereinafter provided, in some lair or other proper place adjacent to the landing-place, for the purpose of being inspected by the Veterinary Inspector appointed by the Commissioners of Her Majesty's Customs for that purpose: And every such

Inspector shall have power to detain, for any longer period, any animal or animals which he has reason to suspect is or are affected with any contagious or infectious disease.

No animal, carcase, hide, meat, offal, provender, or manure, shall be removed from the lairs, except with the permission of the Inspector.

Inspection.

All foreign animals shall be inspected by the Veterinary Inspector appointed for that purpose; and such inspection shall commence as soon as possible after landing.

The final inspection of each animal shall not take place until the end of the twelve hours, except as hereinafter provided, nor except during daylight.

Regulations relating to Contagious or Infectious Diseases amongst Foreign Animals Landed at Ports in Great Britain.

1. *Slaughter.*

Should one or more sheep or swine be found to be affected with any contagious or infectious disease, (except cattle plague,) such sheep or swine shall be kept separate from those of the same cargo which have been passed as healthy. The slaughter of the healthy sheep or swine of such cargo may be permitted to take place immediately, and such slaughtering may, if desired by the importer or consignee, be continued without intermission.

The carcases of the healthy animals, so slaughtered, may be removed without a *post-mortem* examination, under the superintendence of the Inspector, or of the Police, or of any Officer appointed by the Local Authority in that behalf.

The slaughter of the diseased animals shall take place under the superintendence of the Inspector, who shall make a *post-mortem* examination of each carcase, and give instructions as to the disposal of it.

2. *Cleansing and Disinfection.*

When any animal suffering from any contagious or infectious disease has been landed at any port, or has been slaughtered at the landing-place in consequence of being so affected, the landing-place, lair, or other place where such animal has been, shall not be used for any other animals, until such landing-place, lair, or other place has been properly cleansed and disinfected.

3. *Cattle Plague.*

When cattle plague has been detected in one or more of a cargo of animals, the whole of the animals, forming such

cargo, shall be detained and slaughtered at the place of landing.

4. *Pleuro-pneumonia.*

When pleuro-pneumonia has been detected in one or more of a cargo of animals, the whole of the cattle forming part of such cargo shall be subject to the following regulations, namely :—

When such cattle have been landed at any place other than within the defined part of a port, they shall be slaughtered at the landing-place, or if, at the port at which such cattle are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part for the purpose of such slaughter.

When such cattle have been landed within a defined part of a port, or have been moved as above provided into such defined part, they shall not be removed therefrom alive, but shall be slaughtered within such defined part.

5. *Foot and Mouth Disease.*

When foot and mouth disease has been detected in one or more of a cargo of animals, the following regulations shall apply: Provided that such regulations shall be deemed to to apply only to the class of animals amongst which the disease has been found to exist.

1. The cattle, if any, so affected, shall be slaughtered at the landing-place.

2. The cattle, if any, not so affected shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part.

3. The cattle, when landed within a defined part of a port, or, if moved as above provided, into such defined part, shall be slaughtered within such defined part, subject, however, to any regulation affecting any port, in the defining order of which, special permission is granted to remove cattle out of such defined part.

4. The sheep, if any, so affected, shall be slaughterd at the landing-place.

5. The sheep, if any, not so affected, shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part.

6. The sheep, when landed within a defined part of a port,

or if moved, as above provided, into such defined part, shall not be removed therefrom alive, but shall be slaughtered within such defined part.

7. The swine, if any, so affected shall be slaughtered at the landing-place.

8. The swine, if any, not so affected, shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part.

9. The swine, when landed within a defined part of a port, or if moved as above provided, into such defined part, shall not be removed therefrom alive, but shall be slaughtered within such defined part.

6. *Sheep-Pox.*

When sheep-pox has been detected in one or more of a cargo of animals, the whole of the sheep forming any part of such cargo shall (subject to Regulation No. 1) be detained and slaughtered at the place of landing.

7. *Sheep-Scab.*

When sheep-scab has been detected in one or more of a cargo of animals, all the sheep forming any part of such cargo shall (subject to Regulation No. 1) be detained and slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part for the purpose of such slaughter.

THE QUESTION OF SPONTANEOUS GENERATION AND THE PROPAGATION OF INFECTIOUS DISEASES.

At the meeting of the British Association held at Liverpool, Professor Huxley, the president, in the course of his inaugural address proceeded to discuss the long-vexed question of spontaneous generation as it has been treated by a succession of eminent inquirers in Italy, in Germany, and in France—from Spallanzani to Pasteur. He concluded an exhaustive abstract of the labours and investigations of those illustrious discoverers as follows:—

"To sum up the effect of this long chain of evidence, it is demonstrable that a fluid eminently fit for the development of the lowest forms of life,

but which contains neither germs nor any protean compound, gives rise to living things in great abundance, if it is exposed to ordinary air; while no such development takes place if the air with which it is in contact is mechanically freed from the solid particles which ordinarily float in it, and which may be made visible by appropriate means. It is demonstrable that the great majority of these particles are destructible by heat, and that some of them are germs, or living particles, capable of giving rise to the same forms of life as those which appear when the fluid is exposed to unpurified air. It is demonstrable that inoculation of the experimental fluid with a drop of liquid known to contain living particles gives rise to the same phenomena as exposure to unpurified air. And it is further certain that these living particles are so minute that the assumption of their suspension in ordinary air presents not the slightest difficulty. On the contrary, considering the lightness and the wide diffusion of the organisms which produce them, it is impossible to conceive that they should not be suspended in the atmosphere in myriads. Thus, the evidence, direct and indirect, in favour of Biogenesis for all known forms of life must, I think, be admitted to be of great weight. On the other side, the sole assertions worthy of attention are, that hermetically sealed fluids, which have been exposed to great and long-continued heat, have sometimes exhibited living forms of low organisation when they have been opened. The first reply that suggests itself is the probability that there must be some error about these experiments, because they are performed on an enormous scale every day, with quite contrary results. Meat, fruits, vegetables, the very materials of the most fermentable and putrescible infusions, are preserved to the extent, I suppose I may say, of thousands of tons every year, by a method which is a mere application of Spallanzani's experiment. The matters to be preserved are well boiled in a tin case provided with a small hole, and this hole is soldered up when all the air in the case has been replaced by steam. By this method they may be kept for years, without putrefying, fermenting, or getting mouldy. Now this is not because oxygen is excluded, inasmuch as it is now proved that free oxygen is not necessary for either fermentation or putrefaction. It is not because the tins are exhausted of air, for *Vibriones* and *Bacteria* live, as Pasteur has shown, without air or free oxygen. It is not because the boiled meats or vegetables are not putrescible or fermentable, as those who have had the misfortune to be in a ship supplied with unskilfully closed tins well know. What is it, therefore, but the exclusion of germs? I think that Abiogenists are bound to answer this question before they ask us to consider new experiments of precisely the same order. And in the next place, if the results of the experiments I refer to are really trustworthy, it by no means follows that Abiogenesis has taken place. The resistance of living matter to heat is known to vary within considerable limits, and to depend to some extent upon the chemical and physical qualities of the surrounding medium. But if, in the present state of science, the alternative is offered us—either germs can stand a greater heat than has been supposed, or the molecules of dead matter, for no valid or intelligible reason that is assigned, are able to re-arrange themselves into living bodies, exactly such as can be demonstrated to be frequently produced in another way, I cannot understand how choice can be, even for a moment, doubtful. But though I cannot express this conviction of mine too strongly, I must carefully guard myself against the supposition that I intend to suggest that no such thing as Abiogenesis ever has taken place in the past, or ever will take place in the future. With organic chemistry, molecular physics, and physiology yet in their infancy, and every day making prodigious strides, I think it would be the height of presumption for any man to say that the conditions under which matter assumes the properties we call "vital" may

not, some day, be artificially brought together. All I feel justified in affirming is, that I see no reason for believing that the feat has been performed yet. And, looking back through the prodigious vista of the past, I find no record of the commencement of life, and therefore I am devoid of any means of forming a definite conclusion as to the conditions of its appearance. Belief, in the scientific sense of the word, is a serious matter, and needs strong foundations. To say, therefore, in the admitted absence of evidence, that I have any belief as to the mode in which the existing forms of life have originated, would be using words in a wrong sense. But expectation is permissible where belief is not; and if it were given me to look beyond the abyss of geologically recorded time to the still more remote period when the earth was passing through physical and chemical conditions which it can no more see again than a man can recall his infancy, I should expect to be a witness of the evolution of living protoplasm from not living matter. I should expect to see it appear under forms of great simplicity, endowed, like existing *Fungi*, with the power of determining the formation of new protoplasm from such matters as ammonium carbonates, oxalates and tartrates, alkaline and earthy phosphates, and water, without the aid of light. That is the expectation to which analogical reasoning leads me; but I beg you once more to recollect that I have no right to call my opinion anything but an act of philosophical faith.

So much for the history of the progress of Redi's great doctrine of Biogenesis, which appears to me, with the limitations I have expressed, to be victorious along the whole line at the present day. As regards the second problem offered to us by Redi, whether Xenogenesis obtains, side by side with Homogenesis; whether, that is, there exist not only the ordinary living things, giving rise to offspring which run through the same cycle as themselves, but also others, producing offspring which are of a totally different character from themselves, the researches of two centuries have led to a different result. That the grubs found in galls are no product of the plants on which the galls grow, but are the result of the introduction of the eggs of insects into the substance of these plants, was made out by Vallisnieri, Réaumur, and others, before the end of the first half of the eighteenth century. The tapeworms, bladderworms. and flukes continued to be a stronghold of the advocates of Xenogenesis for a much longer period. Indeed, it is only within the last thirty years that the splendid patience of Von Siebold, Van Beneden, Leuckart, Kuchenmeister, and other helminthologists, has succeeded in tracing every such parasite, often through the strangest wanderings and metamorphoses, to an egg derived from a parent, actually or potentially like itself. The tendency of inquiries elsewhere has all been in the same direction. A plant may throw off bulbs, but these, sooner or later, give rise to seeds or spores, which develop into the original form. A polype may give rise to Medusæ or a pluteus to an Echinoderm, but the Medusa and the Echinoderm give rise to eggs which produce polypes or plutei, and they are therefore only stages in the cycle of life of the species. But if we turn to pathology it offers us some remarkable approximations to true Xenogenesis. As I have already mentioned, it has been known since the time of Vallisnieri and of Réaumur, that galls in plants, and "warbles" of cattle, are caused by insects, which lay their eggs in those parts of the animal or vegetable frame of which these morbid structures are outgrowths. Again, it is a matter of familiar experience to everybody that mere pressure on the skin will give rise to a corn. Now, the gall, the "warble," and the corn are parts of the living body, which have become, to a certain degree, independent and distinct organisms. Under the influence of certain external conditions, elements of the body, which should have developed in due subordination to its general plan, set up

for themselves and apply the nourishment which they receive to their own purposes. From such innocent productions as corns and warts, they are gradations to the serious tumours, which, by their mere size and the mechanical obstruction they cause, destroy the organism out of which they are developed; while, finally, in those terrible structures, known as cancers, the abnormal growth has acquired powers of reproduction and multiplication, and is only morphologically distinguishable from the parasitic worm, the life of which is neither more or less closely bound up with that of the infested organism. If there were a kind of diseased structure, the histological elements of which were capable of maintaining a separate and independent existence out of the body, it seems to me that the shadowy boundary between morbid growth and Xenogenesis would be effaced. And I am inclined to think that the progress of discovery has almost brought us to this point already.

I have been favoured by Mr. Simon with an early copy of the last published of the valuable 'Reports on the Public Health,' which, in his capacity of their medical officer, he annually presents to the Lords of the Privy Council. The appendix to this report contains an introductory essay "On the Intimate Pathology of Contagion," by Dr. Burdon Sanderson, which is one of the clearest, most comprehensive, and well-reasoned discussions of a great question which has come under my notice for a long time. I refer you to it for details and for the authorities for the statements I am about to make. You are familiar with what happens in vaccination. A minute cut is made in the skin, and an infinitesimal quantity of vaccine matter is inserted into the wound. Within a certain time a vesicle appears in the place of the wound, and the fluid which distends this vesicle is vaccine matter, in quantity a hundred or a thousand fold that which was originally inserted. Now what has taken place in the course of this operation? Has the vaccine matter by its irritative property produced a mere blister, the fluid of which has the same irritative property? Or does the vaccine matter contain living particles, which have grown and multiplied where they have been planted? The observations of M. Chauveau, extended and confirmed by Dr. Sanderson himself, appear to leave no doubt upon this head.

Experiments, similar in principle to those of Helmholtz on fermentation and putrefaction, have proved that the active element in the vaccine lymph is non-diffusible, and consists of minute particles not exceeding 1-20,000th of an inch in diameter, which are made visible in the lymph by the microscope. Similar experiments have proved that two of the most destructive of epizootic diseases, sheep-pox and glanders, are also dependent for their existence and their propagation upon extremely small living solid particles, to which the title of "microzymes" is applied. An animal suffering under either of these terrible diseases is a source of infection and contagion to others, for precisely the same reason as a tub of fermenting beer is capable of propagating its fermentation by "infection" or "contagion," to fresh wort. In both cases it is the solid living particles which are efficient; the liquid in which they float, and at the expense of which they live, being altogether passive. Now arises the question, are these microzymes the results of homogenesis, or of xenogenesis; are they capable, like the torulæ of yeast, of arising only by the development of pre-existing germs; or may they be, like the constituents of a nut-gall, the results of a modification and individualisation of the tissues of the body in which they are found, resulting from the operation of certain conditions? Are they the parasites in the zoological sense, or are they merely what Virchow has called "heterologous growths?" It is obvious that this question has the most profound importance, whether we look at it from a practical or from a theoretical point of view. A parasite may be stamped out by destroying its germs, but a patho-

logical product can only be annihilated by removing the conditions which give rise to it. It appears to me that this great problem will have to be solved for each zymotic disease separately, for analogy cuts two ways.

I have dwelt upon the analogy of pathological modification, which is in favour of the xenogenetic origin of microzymes; but I must now speak of equally strong analogies in favour of the origin of such pestiferous particles by the ordinary process of the generation of like from like It is, at present, a well-established fact that certain diseases, both of plants and of animals, which have all the characters of contagious and infectious epidemics, are caused by minute organisms. The smut of wheat is a well-known instance of such a disease, and it cannot be doubted that the grape disease and the potato disease fall under the same category. Among animals, insects are wonderfully liable to the ravages of contagious and infectious diseases caused by microscopic *Fungi*. In autumn, it is not uncommon to see flies, motionless upon a window-pane, with a sort of magic circle, in white, drawn round them. On microscopic examination, the magic circle is found to consist of innumerable spores, which have been thrown off in all directions by a minute fungus called *Empusa muscæ*, the spore-forming filaments of which stand out like a pile of velvet from the body of a fly. These spore-forming filaments are connected with others, which fill the interior of the fly's body like so much fine wool, having eaten away and destroyed the creature's viscera. This is the full-grown condition of the *Empusa*. If traced back to its earlier stages, in flies which are still active, and to all appearance healthy, it is found to exist in the form of minute corpuscles, which float in the blood of the fly. These multiply and lengthen into filaments, at the expense of the fly's substance; and when they have at last killed the patient, they grow out of its body and give off spores. Healthy flies shut up with diseased ones catch this mortal disease and perish like the others. A most competent observer, M. Cohn, who studied the development of the *Empusa* in the fly very carefully, was utterly unable to discover in what manner the germs of the *Empusa* got into the fly. The spores could not be made to give rise to such germs by cultivation; nor were such germs discoverable in the air, or in the food of the fly. It looked exceedingly like a case of abiogenesis, or, at any rate, of xenogenesis; and it is only quite recently that the real course of events has been made out. It has been ascertained that when one of the spores falls upon the body of a fly, it begins to germinate, and sends out a process which bores its way through the fly's skin; this, having reached the interior cavities of its body, gives off the minute floating corpuscles which are the earliest stage of the empusa. The disease is "contagious," because a healthy fly coming in contact with a diseased one, from which the spore-bearing filaments protrude, is pretty sure to carry off a spore or two. It is "infectious," because the spores become scattered about all sorts of manner in the neighbourhood of the slain flies.

The silkworm has long been known to be subject to a very fatal contagious and infectious disease called the muscardine. Audouin transmitted it by inoculation. This disease is entirely due to the development of the fungus, *botrytis bassiana*, in the body of the caterpillar; and its contagiousness and infectiousness are accounted for in the same way as those of the fly-disease. But of late years a still more serious epizootic has appeared among the silkworms; and I may venture a few facts which will give you some conception of the gravity of the injury which it has inflicted on France alone. The production of silk has been for centuries an important branch of industry in Southern France, and in the year 1853 it had attained such a magnitude, that the annual produce of the French sericulture was estimated to amount to a tenth of that of the whole world, and represented a money value of

117,000,000 of francs, or nearly five millions sterling. What may be the sum which would represent the money value of all the industries connected with the working up of the raw silk thus produced is more than I can pretend to estimate. Suffice it to say, that the city of Lyons is built upon French silk, as much as Manchester was upon American cotton, before the civil war. Silkworms are liable to many diseases; and even before 1853 a peculiar epizootic, frequently accompanied by the appearance of dark spots upon the skin (whence the name of "Pébrine" which it has received), had been noted for its mortality. But in the years following 1853 this malady broke out with such extreme violence, that in 1856 the silk crop was reduced to a third of the amount which it had reached in 1853; and up till within the last year or two it has never attained half the yield of 1853. This means not only that the great number of people engaged in silk-growing are some thirty millions sterling poorer than they migh have been; it means not only that high prices have had to be paid for imported silkworm eggs, and that, after investing his money in them, in paying for mulberry-leaves and for attendance, the cultivator has constantly seen his silkworms perish and himself plunged in ruin; but it means that the looms of Lyons have lacked employment, and that for years enforced idleness and misery have been the portion of a vast population which in former days was industrious and well-to-do.

In 1858 the gravity of the situation caused the French Academy of Sciences to appoint commissioners—of whom a distinguished naturalist, M. de Quatrefages, was one—to inquire into the nature of this disease, and, if possible, to devise some means of staying the plague. In reading the report made by M. de Quatrefages in 1850, it is exceedingly interesting to observe that his elaborate study of the Pébrine forced the conviction upon his mind that in its mode of occurrence and propagation, the disease of the silkworm is, in every respect, comparable to the cholera among mankind. But it differs from the cholera, and, so far, is a more formidable disease, in being hereditary, and in being, under some circumstances, contagious, as well as infectious. The Italian naturalist, Filippi, discovered in the blood of the silkworm affected by this strange disease a multitude of cylindrical corpuscles, each about 1-6000th of an inch long. These have been carefully studied by Lebert, and named by him Panhistophyton; for the reason that, in subjects in which the disease is strongly developed, the corpuscles swarm in every tissue and organ of the body, and even pass into the undeveloped eggs of the female moth. But are these corpuscles causes, or mere concomitants of the disease? Some naturalists took one view and some another; and it was not until the French Government, alarmed by the continued ravages of the malady, and the inefficiency of the remedies which had been suggested, despatched M. Pasteur to study it, that the question received its final settlement; at a great sacrifice, not only of the time and peace of mind of that eminent philosopher, but, I regret to have to add, of his health. But the sacrifice has not been in vain. It is now certain that this devastating, cholera-like Pébrine is the effect of the growth and multiplication of the panhistophyton in the silkworm. It is contagious and infectious because the corpuscles of the panhistophyton pass away from the bodies of the deceased caterpillars, directly or indirectly, to the alimentary canal of healthy silkworms in their neighbourhood; it is hereditary, because the corpuscles enter into the eggs while they are being formed, and consequently are carried within them when they are laid, and for this reason, also, it presents the very singular peculiarity of being inherited only on the mother's side. There is not a single one of all the apparently capricious and unaccountable phenomena presented by the Pèbrine, but has received its explanation from the fact that the disease is the result of the presence of the microscopic

organism, panhistophyton. Such being the facts with respect to Pèbrine, what are the indications as to the method of preventing it? It is obvious that this depends upon the way in which the panhistophyton is generated. If it may be generated by abiogenesis, or by xenogenesis, within the silkworm or its moth, the extirpation of the disease must depend upon the prevention of the occurrence of the conditions under which this generation takes place. But if, on the other hand, the panhistophyton is an independent organism, which is no more generated by the silkworm than the mistletoe is generated by the oak, or the apple tree, on which it grows, though it may need the silkworm for its development in the same way as the mistletoe needs the tree, then the indications are totally different. The sole thing to be done is to get rid of and keep away the germs of the panhistopyhton. As might be imagined, from the course of his previous investigations, M. Pasteur was led to believe that the latter was the right theory; and guided by that theory, he has devised a method of extirpating the disease, which has proved to be completely successful wherever it has been properly carried out. There can be no reason, then, for doubting that, among insects, contagious and infectious diseases, of great malignity, are caused by minute organisms which are produced from pre-existing germs, or by homogenesis; and there is no reason, that I know of, for believing that what happens in insects may not take place in the highest animals. Indeed, there is already strong evidence that some diseases of an extremely malignant and fatal character to which man is subject, are as much the work of minute organisms as is the Pébrine. I refer for this evidence to the very striking facts adduced by Professor Lister in his various well-known publications on the antiseptic method of treatment. It seems to me impossible to rise from the perusal of these publications without a strong conviction that the lamentable mortality which so frequently dogs the footsteps of the most skilful operator, and those deadly consequences of wounds and injuries which seem to haunt the very walls of great hospitals, and are, even now, destroying more men than die of bullet or bayonet, are due to the importation of minute organisms into wounds, and their increase and multiplication; and that the surgeon who saves most lives will be he who best works out the practical consequences of the hypothesis of redi.

I commenced this address by asking you to follow me in an attempt to trace the path which has been followed by a scientific idea, in its long and slow progress from the position of a probable hypothesis to that of an established law of nature. Our survey has not taken us into very attractive regions; it has lain chiefly in a land flowing with the abominable, and peopled with mere grubs and mouldiness. And it may be imagined with what smiles and shrugs practical and serious contemporaries of Redi and of Spallanzani may have commented on the waste of their high abilities in toiling at the solution of problems which, though curious enough in themselves, could be of no conceivable utility to mankind. Nevertheless, you will have observed, that before we had travelled very far upon our road there appeared, on the right and on the left, fields laden with a harvest of golden grain, immediately convertible into those things which the most sordidly practical of men will admit to have value—namely, money and life. The direct loss to France caused by the Pébrine in seventeen years cannot be estimated at less than fifty millions sterling; and if we add to this what Redi's idea, in Pasteur's hands, has done for the wine-grower and for the vinegar-maker, and try to capitalise its value, we shall find that it will go a long way towards repairing the money losses caused by the frightful and calamitous war of this autumn. And as to the equivalent of Redi's thought in life, how can we overestimate the value of that knowledge of the nature of epidemic and epizootic diseases, and consequently of the means of

checking or eradicating them, the dawn of which has assuredly commenced? Looking back no further than ten years, it is impossible to select three (1863, 1864, and 1869) in which the total number of deaths from scarlet fever alone amounted to ninety thousand. That is the return of the killed, the maimed and disabled being left out of sight. Why, it is to be hoped that the list of killed in the present bloodiest of all wars will not amount to more than this. But the facts, which I have placed before you, must leave the least sanguine without a doubt that the nature and the causes of this scourge will, one day, be as well understood as those of the Pébrine are now; and that the long-suffered massacre of our innocents will come to an end. And thus mankind will have one more admonition that "the people perish for lack of knowledge:" and that the alleviation of the miseries and the promotion of the welfare of men must be sought by those who will not lose their pains in that diligent, patient, loving study of all the multitudinous aspects of Nature, the result of which constitute exact knowledge or science. It is the justification and the glory of this great meeting that it is gathered together for no other object than the advancement of the moiety of science which deals with those phenomena of nature which we call physical. May its endeavours be crowned with a full measure of success!

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

The fifth annual meeting of this Association was held at the Queen's Hotel, Burton-on-Trent, on Tuesday, July 19th. There were present, Mr. H. Pyatt, of Nottingham, the President, Messrs. Carless, Rossell, and Garrard, Vice-Presidents, and the following members:—H. King, W. C. Ison, T. Cave, Ed. Bailey, sen., G. Poyser, F. Blakeway, W. P. Toll, J. Markham, Alf. Proctor, G. Cowlishaw, T. Greaves, Hon. Associate, and the Secretary.

The ordinary business of the meeting having been concluded, the *President* delivered an Introductory Address to the following effect:—

Gentlemen of the Midland Counties Veterinary Medical Association,—In addressing you to-day, permit me to thank you for having elected me your president for the ensuing year. I reluctantly accepted the office, feeling conscious there were many members who would more efficiently fulfil the duties of the situation; but at the same time allow me to say, that in anxiety for the promotion of this Association, and for the elevation of our profession, I give place to none; and I assure you that I will endeavour to the best of my ability to further the interests thereof.

At the present time the subject of education occupies the minds of the majority of persons in this country; and from the government

downwards, people appear to have suddenly thought a more extensive scheme of teaching necessary for the welfare of the country at large. I think that we too should stir ourselves, for in my opinion the time has arrived when an improved system of instruction should be introduced in our Colleges.

At the present time, a young man having decided to follow the veterinary profession, is very often sent direct to College, and not unfrequently without having had a proper education, or without having served an apprenticeship. Now allow me to ask the question, how is it possible for such a man to get on in the world, or be a credit to the profession, not having had any practical instruction before entering the College? I contend that out of such a number of students as attend the different colleges it is an impossibility for the professors, however anxious or willing they may be, to afford the students individually an opportunity of becoming thoroughly practical; therefore, when they leave College, although they may be well up as theorists, as practitioners they soon feel lost.

Now comes the question—what is to be the remedy?

The Council of the Royal College of Veterinary Surgeons have very wisely decided upon enforcing a preliminary examination, to be conducted by qualified men totally independent of the teachers.

In my opinion this is very good, and the proper way to begin, but I would supplement it by insisting that gentlemen entering the colleges should have served an apprenticeship of three years with a Member of the Royal College of Veterinary Surgeons, and bring a certificate to that effect. If this were done, it would be far better, both for the profession and the public.

Another very important matter to my mind is this, that botany should be taught in all our schools. All veterinary surgeons need a knowledge of botany, but especially we country practitioners, for I think that in many obscure cases a knowledge of botany would materially assist us in forming a correct diagnosis, and in the treatment also of disease.

Then again we, as a body, are deficient in our knowledge of analytical chemistry; I say this because I know that the opportunity afforded at certainly one College is not sufficient to enable a student to become efficient in conducting an analysis, for I am sure you will agree with me that he can only become so by working in the laboratory.

Now, for a student to become acquainted with these subjects, I consider it would be advisable to extend the course from two to three sessions, and at the expiration of each session to have an examination in two branches of veterinary science; for example, a first sessioner should take anatomy and physiology; a second sessioner, chemistry, materia medica, and botany; a third sessioner, horse and cattle pathology. In addition to this, at the final examination, a practical examination should be included, which in my opinion might be instituted as follows:—Each candidate should, accompanied by his examiners, visit the patients in the infirmary, examine horses, and other domesticated animals, and give his opinion on the same.

In conclusion, allow me to thank you for listening to what I have had to say. I state these opinions, not finding fault with what is now done, but thinking the time has now arrived that we should be energetic, for I should be very sorry to see the profession to which I have so many years belonged left behind in the progress of science.

After the delivery of the President's address *Mr. G. Poyser*, of Ashbourne, read his "Essay on Contagious Pleuro-Pneumonia in Cattle."

Mr. PRESIDENT and GENTLEMEN :—

The reasons which have led me to trouble you with my ideas of some of the characteristics of this disease are the uncertain notions apparently prevailing among the public and in a less degree in the profession, regarding its contagious and specific nature. The majority of writers on this subject, with which I am acquainted, have failed to give any definite opinions of these attributes. I know one member of our profession in particular, and who from his years, position, and practice, must have had a fair share of experience, who publicly proclaims his disbelief in its contagious nature. I know others whose opinions are sceptical. I know intelligent farmers and gentlemen, leading spirits of agricultural societies, who think that food, weather, impurities, atmospherical agencies, and artificial management are among the causes of this, to them, indigenous disease of our cattle. Even as recently as the October number, 1869, of the *Veterinarian* there is the reprint of an essay read before the Eastern Counties Veterinary Medical Association, in which the author states it to be a question difficult to decide whether atmospheric agencies, unseasonable weather, quality of food and water, impurities of sheds, and confinements on board ship, merely predispose to, or actually generate the morbific matter. There is no writer whose views so far agree with my limited experience as those of Professor John Gamgee. He says, "The outbreak of contagious pleuro-pneumonia in countries beyond the centres of spontaneous origin, the mountainous regions of Central Europe, is wholly due to contagion, and the contagious nature of this virulent malady is incontestably proved by an overwhelming amount of evidence."

Gentlemen, I am not about to lay before you a minute detail of the history of the disease, or an elaborate record of its physio-pathology (although I think the field of research sufficiently unexplored to repay those qualified to enter upon it), but to give you a plain unbiassed narrative of my experience regarding it.

Soon after I entered on my pupilage to the veterinary profession in March, 1846, my then master was requested to visit a farm whereon were kept about twenty cows and a bull. It was found that three cows were then unwell, and in a few days, two more were perceived amiss ; they were all treated : three died and two recovered. It was considered to be the new fatal disease, contagious pleuro-pneumonia, about which everybody was talking, but of which little was then known. The cattle on this farm at this time were housed.

It was agreed to turn all out except the bull, who occupied a small building on the other side of the yard. After the apparently sound cows, as well as the two that were better, had been out a few weeks, others were found affected, and it was determined to dispose of the whole. The animals, including the bull, were accordingly sold at a neighbouring fair.

It was in August of the same year I went with my master to a farm three miles on the other side of our home to see a sick bull. Contagious pleuro-pneumonia was soon found to be his disease; in a few days he died, and his carcase was entirely cleared away. On inquiry it was found that he had been bought in the previous May at the fair above named, and in fact belonged to the herd of which I have spoken. My master, who previously thought the disease was of atmospheric origin, now inclined to the opinion that this bull must have brought it in his system from the other farm, and it was greatly feared, as the animal had served and been pastured with a lot of cows since his arrival, that some must have caught what was considered an infectious disease. However, weeks and months passed by, and all the animals with which this bull had been in contact remained healthy.

If I reflect through a series of years, I could recall an almost numberless array of such cases where newly purchased animals mixed with the herd a few weeks or months, on being attacked were isolated, and ultimately died or destroyed, no more cases being seen. It is in these instances that the various prophylacties, inoculation, setoning, drenching, &c., have gained undue credit. On the other hand, I could cite many instances, each with its own peculiar history, where the restoration to apparent health of a recently purchased animal, the true character of whose disease had not been ascertained, admitted its subsequent contact with the herd, had been followed with most serious loss. Also where the newly purchased cattle have had so mild an attack as entirely to have escaped the farmer's observation, contagious pleuro-pneumonia never being dreamt of; when lo! and behold! in two or three months, the greatest favourite, the most acclimatised animal in the herd, would be seized, and in the result the disease would sweep off the whole lot, with the exception of one or two animals that did not succumb to the disease. In a month or two the farm would be re-stocked, a short time after which, although the animals had been selected from healthy herds, the disease would again make its dire appearance; the farm would then be stocked with sheep for twelve months, thus unconsciously, time would be allowed for any animal remaining on the farm and recovering from the disease, to fairly throw off every vestige of contagious matter. Presuming the place to be again restocked with healthy cattle, all would go well. Then it would appear to attack cattle in particular localities; certain farms and certain villages were scarcely ever to be considered free, and so I was taught what appeared to be the general opinion of the agricultural public, that contagious pleuro-pneumonia, like the potato disease, settled down here and there, and was not a contagious epizootic, but an

infectious enzootic, and the farm, the locality, the atmosphere, the vegetation, the water, artificial food and manures, and other innocent agents were improperly credited with the evil.

Causes.—The conclusion that has been arrived at by various learned commissions, and the individual investigations of several distinguished gentlemen in our profession, is that the disease was unknown in England (during this century) prior to the year 1841, and that since its appearance, the markets, fairs, and farms of cattle dealers have constituted the busy centres of infection; that the late cattle plague restrictions have partially obliterated it, and the recent parliamentary enactments taken as a public expression regarding it, together prove its contagious character. But in none of these elucidations have the method of propagation or the probable period of its communication from a diseased animal been suggested. Hence the absurd "regulations" that permit owners of infected herds to dispose of them without restraint thirty days after the last recognised attack.

The method of its propagation would appear to be difficult to make out, as inoculation of healthy animals with what we deem to be the actual virus fails to produce any effects identical with the affection taken naturally; and chemistry tells us that in the structure and chemical constitution of the various animal poisons there is no difference, that they may be either fluid or volatile, and that often the most potent ones are simple fluids, and that we know them only by their effects. But the period of communication would seem to be more within the region of our observation.

In giving my local experience, I should say it never arose spontaneously, and never spread but by contagion, however mysterious the history of its occurrence may appear to be when we are furnished with the whole truth. I have of late years seldom failed to trace its origin; thus I have ascertained that atmospheric influences and other abnormal agencies were only accessory causes, tending to increase or mitigate the severity of the disease, not to induce it.

It may, however, be observed that parturition, lactation, and insufficient food exhausting the vital energies, render milch cows and cow store stock particularly liable to its ravages.

With your permission, Mr. President and Gentlemen, I will now give you the history of a few cases illustrative of my position. In the month of May, 1865, a farmer and cattle dealer in my neighbourhood bought three cows in Yorkshire; one he sold to his landlord, a magistrate, the second to a neighbouring farmer, and the third he concluded to keep. The last was, therefore, turned with his herd of twenty milking cows. In a fortnight after this animal had been so pastured, I was requested to see her. On my second visit I was of opinion the animal was affected with contagious pleuro-pneumonia, and ordered her to be slaughtered, as death seemed inevitable. The owner desired me not to say a word, as it would injure his transactions, not then telling me anything about her two fellows, which were sold and gone. No other case happened here.

It was not until the month of August following that I was called to the house of the farmer who bought the second cow. I found an animal very ill; had suspicions; isolated her; saw her again, and decided on her disease; a *post-mortem* examination verified my opinion; this cow had been on the farm two years. I questioned the owner, who said he had bought a cow early in June. "Where was she?" "In the pasture with the others." "Had she been unwell?" "Soon after I bought her she hoosted a bit; I thought she had taken cold. I nursed her a day or two, and she appeared to go all right; however, she had not milked so well as she ought, but she had been with the rest ever since." I examined her, and found cavernous respiration in one lung; otherwise she looked tolerably well. From this time this man's herd of forty cows began to dwindle away. I rowelled and drenched a number that seemed healthy; put them in one lot, but it was of no avail; little good was done; some were slaughtered, some were sold, and went away alive, and some few had the disease mildly, and recovered, and the cow which was doubtless the cause of all this mischief was again ill with pneumonia in the other lung. It soon made short work of her, and a *post-mortem* examination revealed the ravages of her former disease.

In the same month of August I was called to the farm of the magistrate before mentioned to see a favourite cow that was very ill with a swelling around the front of her neck, extending from the sternum nearly to the larnyx; respiration and deglutition were most difficult; nothing but fluids could be taken; the swelling was œdematous, and could be seen to increase daily; treatment was of no avail. The case was seen alive and dead by another veterinary surgeon, who said it was not contagious pleuro-pneumonia. I held to the opinion that it was a case of contagious exudative pleuro-pneumonia, notwithstanding the bulk of the exudation was extra thoracic; in the areolar tissue around the esophagus and trachea, when the swelling was cut obliquely, the exudation matter had the appearance of being arranged in consecutive layers. I also observed that the free border of the lobes of one lung were infringed for half an inch in depth with pleuritic effusion—clear evidence to me of the nature of the malady. In less than a week our disputation was set aside by the occurrence of a clear case of the disease in another cow of the same herd, and in about a month the whole lot (seven) save the cow bought from the dealer in the spring were swept away. I now examined the animal which seemed so miraculously to have escaped, and found in auscultating one side of her chest a bronchial râle, cat's purr, and leathery function sounds, evidence together with her history and condition of the disease under which she had been labouring.

The insight I gained by studying the history of these three cows convinced me that the means of propagating the disease were as follows: First, from the cow retained by the dealer, although she was pastured for a fortnight, and that fortnight the last of her incrementary (incubative) period, she failed to communicate the

disease to others. This fact verified strongly an opinion gained from similar cases which I had long entertained, that as a rule cattle do not communicate the disease of contagious pleuro-pneumonia to each other during the period of incubation. The other two cases led me to think that the really infectious period of this contagious bovine malady, as in human contagious diseases, was greater after the incrementory (incubative) stage had been passed. And here again a long list of personal records verified my thoughts, that slight and unrecognised attacks, and those making complete or partial recoveries in every stage of approaching convalescence from contagious pleuro-pneumonia, were the real sources of danger.

From this time up to the present I have had many opportunities of strengthening my convictions by illustrative cases, two of which I will cite. Two years ago a neighbouring veterinary surgeon was called by a farmer to see one of two cows he had recently purchased, both of which had herded since the date of arrival (about seven days) with the other stock. The indisposed cow appeared to be excited, breathing quick, averse to food, &c. She was about her stated time for calving, and it was supposed she would be better when she had done so, which she did the next day; however, she gradually grew worse, and died in a few days. If her disease was recognised, the owner was never made acquainted with it. In about a fortnight from her death, the other of the two animals recently purchased was perceived unwell, and the services of the same professional man again required. It was thought she had taken cold; was treated, and recovered, and in a short time turned back into the pasture, when lo! and behold! in about three weeks a cow two years on the farm was ill, and her disease said to be pleuro-pneumonia, of which she died in a few days. Other cows similarly affected were soon found, onward it went, some died, some recovered, until nearly every head of cattle on the place had had its turn; after which the animals on the next farm began to be attacked.

It was stoutly denied that the second cow which recovered and was doing well ever, had the disease; however I kept my eye upon her for nearly two years, and after much trouble I saw her slaughtered as a fat cow, November, 1869, when I found one lung firmly attached to the costæ and other evidences of former pleuro-pneumonic disease.

In the summer of 1868 I was called to see a cow belonging to a client of mine; she was one of two purchased in the month of May preceding; with an unfailing diagnostic aid in contagious pleuro-pneumonia I was soon enabled to decide the case to be so. The owner would not have her destroyed, but in a few days she died; ten days afterwards the other cow was found ill from the same disease; I treated her simply, she recovered, and in a week from the time she began to recover she became remarkably yellow on the skin, from which there arose a large amount of dandriff; she was still "hoosking," although her breathing and appetite were much improved. My client now wanted to have her back with the rest of his cows, where both of these animals had been. "No no!" said I;

unless you want to lose all your cows, you must keep this one by herself for the next three months." It was with difficulty that I ultimately ruled; the cow was isolated for three months, at the end of which time she was turned with the others, the whole having remained free from contagious pleuro-pneumonia ever since. Thus from positive and negative evidence I have been led to consider that the minimum period of infection is the stage of incubation or period of incrementation of the morbific matter received by the infected animal; and that the maximum period of infection is after the true character and consequences of the disease have been developed within an animal whose *vis vitæ* has not succumbed to its ravages, and where nature has commenced to make the products of the affection excrementary. I therefore divide them into the incrementery and excrementary periods or stages of the disease, and I feel as if I could not lay sufficient stress upon this distinction, in the physio-pathological considerations of this virulently contagious malady.

In concluding this part of our subject, I must appeal to the experience of every individual present, which when viewed in the light I have suggested will furnish fresh testimony as to the cause of the spread of this epizooty. It may be difficult to understand in what form the virus is transmitted, or of what it consists, yet my experience points to a fact, viz., that association and cohabitation of healthy stock with those that are recovering from mild or severe attacks, or those which have passed however slightly the incrementary (incubative) period, and are therefore beginning to excrete the products of this disease, are necessary for the transmission of contagious pleuro-pneumonia.

In the recent researches of Professor Tyndall on the decomposition of vapours by light, he has demonstrated that the dust particles constantly floating in our atmosphere are organic combustible matter. He says "I was by no means prepared for this, for I had thought with the rest of the world that the dust of our air was in great part inorganic noncombustible" (see Lecture delivered at the Royal Institution, January, 1870), and from it he infers a most beautiful germ theory of epidemic disease.

As veterinary surgeons we are all aware and have no doubt frequently observed the large amount of dandriff, scurf, cuticular eruption given off from the skins of animals (especially have I seen it in the cow) when recovering from attacks of exanthematous disease. It is therefore comparatively easy to understand how this skin-dust, this exanthematous epithelial-debris, being organic matter, may and does float in the atmosphere that surrounds diseased animals, and may thus by inhalation be the means by which the germs of disease are implanted in the systems of others. However, gentlemen, this beautiful theory is worthy of your consideration.

Symptoms.—Since the time of the Cattle Plague we have had placed in our thoughts and some of us in our hands a simple and precise method of medical research which we cannot value too highly—I mean the thermometer, thanks to Professor Gamgee. Of

one of these valuable little instruments I early possessed myself, and soon found that not only was it useful in demonstrating the inception or presence of the "Steppe disease," but that it indicated an equal increase of animal heat during the incrementation of contagious pleuro-pneumonia; I also found that the increase of heat above the normal amount belonging to each class of animal we are called to attend, is an invariable accompaniment of imflammatory disease, as well as those of a contagious epizootic character; but that so great an increase does not accompany sporadic as it does disease of a zymotic type. Hence the thermometer becomes a sure diagnostic aid in distinguishing contagious pleuro-pneumonia from those sporadic affections with which it has often been confounded.

Suppose then an animal has received the infection, the virus of contagious pleuro-pneumonia; and most probably it will have received it through inhalation; organic matter has been partaken of, that will at once proceed to reproduce itself, and in a variable time, say from two to twelve weeks, will have perfectly pervaded the infected animals' system. During the latter part of this period another series of changes would appear to be inaugurated; inflammatory fever is gradually induced, which for the first week or ten days of its existence only appears to give a stimulus or flip to all the functions of animal life; it takes possession of every part of the system as evidenced by the thermometer indicating a slight increase of temperature in every part. How often have we all been told that our new patient has been feeding, milking, or growing better than usual; and, if the case is a barren cow, that she was in œstum last week; during all this time, however, the animal has been showing signs of bronchial irritation, by a cough which appears to be increasing every day, and I have no doubt that during this gradually increasing inflammatory condition the animal suffers from shivering fits and exacerbations of the now rapidly developing malady, until some evening the creature is so ill that its sickness is apparent to any bystander. It is now that veterinary aid is invoked.

We now find the animal with a staring coat, excited and anxious countenance, quick breathing with or without a grunt, both the breathing and the grunting painfully increased by a short sharp run, bowels slightly costive, secretion of urine scanty, and if a cow little or no milk, and a pulse, not as Professor Gamgee says, full and frequent, but small and frequent, 80 or more per minute. The pulse at this stage and up to the full incrementation of the disease always gives me the idea of a small stream forcing its way through a contracted inelastic tube; in fact I have long thought a contagious pleuro-pneumonia pulse to be very constant in character. The lining membrane of the nose will often have dark bluish patches on it, but in every case you will find the nasal cartilages have a peculiar spasmodic action at each inspiration; you will find also the elbows projecting and the caput muscles trembling; the cough is short, suppressed, unsonorous, and painful; percussion gives evidence of pleuritic pain as well as dulness of sound over some portion of the

thoracic cavity. Auscultation gives evidence of consolidatic n of some portion of one or both lungs, or else we only hear the inspiratory and not the expiratory murmur with exceedingly loud bronchial and vesicular sounds, over other parts of the chest.

It is not however my intention to weary you with a long and minute detail of symptoms with which I presume we are all familiar, but rather to describe the various thermometrical changes that I have observed during the progress of the malady. If ever an opportunity so occurs that you could examine an animal seven days before it developes the ordinary signs of epizootic pleuro-pneumonia you will find if the animal is at pasture that the thermometer placed in the vagina will indicate 103 or 104° Fahr. At this time also the animal will show signs of restlessness; it will sometimes bellow a good deal, which effort will generally end with a fit of coughing; its coat will be extra glossy; indeed the animal will appear to be in an excited and almost superhealthy condition. But if all these symptoms are taken into consideration with a knowledge of what is to follow, we shall see that they are indications of a systemic incrementation of animal heat or inflammatory fever which is choosing the thoracic cavity for its particular ravages. If the thermometrical examinations are made on the day we are first ordinarily called to these cases we shall most likely find the reading about 104 or 105° Fahr., varying according to the severity of the attack, or the stage in which we observe it, or the age of the animal, or whether kept in or out of doors, or during winter or summer season. From this date to the full incrementation or development of the malady, known by the more or less extensive exudation, hepatization, and consolidisation of lung tissue before the vital energies begin to fail, or in those cases which recover or have the disease mildly, the point round which they take a favorable turn, we find the temperature daily increasing until it has reached 107 or 108° Fahr. per vaginam or even 109° per rectum, and allow me here to remark that I have often observed 107° Fahr. per vaginam to the point marking the fatal increment; seldom, however, do animals recover after a temperature of that magnitude has been attained.

In the sporadic forms of pleuro-pneumonia, in gastro-bronchitis that distressing disease of cattle brought on by eating after grasses, in pneumonia, bronchitis, pleurisy, gastritis, gastro-enteritis and other allied diseases, for some of which contagious pleuro-pneumonia has often been mistaken, notwithstanding the temperature of the organs affected is without doubt greater, I have always failed to find the systemic or constitutional heat more than 104 or 105° Fahr. per vaginam. It is therefore comparatively easy when viewing any of the above-mentioned cases, no matter what distressing symptoms may be present if the systemic temperature does not exceed 105° Fahr., to decide that it is not contagious pleuro-pneumonia we are dealing with. As soon as a decrease of temperature is perceivable we may presume the period of incrementation has passed, the specific poison has leavened the whole system, no more remains to be contaminated; there is a pause, a rest from such great vital activity.

If the vital energies are not too much exhausted, or the organic alterations and obstructions too great, dame nature sets about a restoration, if otherwise, vitality sinks into death; molecular inertia prevails. In either case we have a gradual decrease of temperature, not however so rapid for returning health, as for death.

It is in cases of recovery, as soon as the vital energies are somewhat restored, that nature begins to relieve herself of the products of the disease by the process of excretion, which I believe is going on more or less for three months. This, then, in my opinion is the period of danger, the period of excrementation, the period of infection, the period *par excellence* of contamination.

It would be incorrect to state that the ravages in the lungs after a severe attack of contagious pleuro-pneumonia are never restored, for I have known extensive lobular hepatization, and interlobular and thoracic infiltration removed, and the lung restored to usefulness, but I do not believe that attached pleuræ are ever divorced; thus it is an ever-remaining sign of what has been.

Nevertheless, how many animals after coughing up decayed pieces of lung tissue or fibrinous castings of bronchial tubes, in three or four months succumb with abscesses in the lung, enclosing masses of decayed tissue and degenerated fibrinous deposits, having only rallied for a period to disseminate amongst their companions the virulent malady to which they at last become victims.

Physio-Pathology.

In the course of my remarks I have limited my opinions of the pathology of contagious epizootic pleuro-pneumonia. Differing from all writers that I have read and all lecturers that I have heard, I entirely discard the notion that it is a dropsical disease in the primary sense of that word, but I concede that after the malignant fever has run its course, checked all the animal excretions and secretions, and thus thrown back on the circulating media an increased quantity and impure quality of serosity, nature attempts to relieve herself by thoracic and interlobular effusion, which may be called dropsical. So may every effusion when it is the result of inflammation. I believe contagious pleuro-pneumonia to be a malignant specific sub-acute inflammation of the lungs and pleuræ, preceded and accompanied by a systematic inflammatory fever, and I account for the appearances in the thorax after death in the following manner.

As every orb of the planetary world of our universe rotates round its own axis, as well as duly moving in its allotted sphere, so can I see in healthy blood each globule gyrating around its own centre as it circulates through our veins, while duly performing its important but minute functions for the wellbeing of our animal economy. So also does it occur that when the fluid media in which those blood-globules live, move, and develop, become by induced or determinate causes and undevelopable media, or blastema to them, that I can understand their tendency to run together, to coalesce, from the

normal fluid influence exerted upon their cell walls (on exosmotic and endosmotic principles). Thus we find in blood flowing through an inflamed part, also in the blood of individuals suffering from inflammatory fever, a great tendency of the corpuscles to run together in firm rolls, and a thin exudative fluid coursing freely around them. Wherever we have inflammatory fever we have increase of temperature, the result of which is contraction of the arterial system, especially the terminal ends of capillary vessels, arrestation of the rolls of corpuscles, increase of the watery parts of the blood, from checked excretion consequent on the systemic fever present, the arrestation of the rolls of corpuscles commencing in the inflamed and contracted ends of the lobular capillaries of the limp, and the exudation of the serous parts of the blood into the surrounding interlobular tissue for relief. The systemic fever, whose existence the thermometer indicates in all cases of this virulent malady, must also favour those excessive fibrinous deposits which so often occur in the inflamed pleuræ. For hear what Dr. Richardson says in that most interesting article reprinted into the *Veterinarian* for June, 1869, "On the Increment of Animal Heat." "When by the exposure to air of a high temperature under the conditions above named, or when from any other cause the temperature of the body itself is increased, a train of symptoms follow which are as simple in their character as any in nature, and which cover whole fields of what is called medical experience. The first sign we observe is the accumulation of heat itself, the fever I may most properly call it, in order to retain an old and significant name. But the fever is not to be considered as a mere symptom, it is truly a symptom, but it carries with it when properly understood all the rest of the symptoms. It is primary, the others follow, and are dependent on it. Next to increase of heat, and the first result, is increase of involuntary motion, motion of respiration and motion of circulation. This increase of speed in the two grand sets of muscles, the prime movers of the body, is as much a quick driving from excess of heat as is the driving of an engine from heat in the furnace. Thus the pulse increases with the increase of heat in the body, both in tension and in rapidity of stroke, and it falls with fall of temperature, either in tension or rapidity, or both. This excess of motion in many cases is of immediate service to the organism; it is an equalising process, it prevents to a marked extent the further increment of heat, it employs or uses up the force.

"When the accumulation of heat is moderate and slow, the increase of motion is frequently succeeded by free elimination of water from the body, and here again is a most effective equalising agency. Indeed, this process of elimination once started, it is very difficult to sustain or advance increment of animal temperature. By this process of evaporation we are enabled in the Turkish bath to resist those extremes of heat which I have already spoken of as endurable.

"But when the accumulation of heat is rapid and determinate,

instead of free elimination from the excreting and secreting surfaces, there is the opposite condition of dryness, or as it is commonly said, supressed secretion. In all acute inflammatory conditions we know this suppression of secretion to be a bad sign. What is the meaning of it? The meaning is most simple, and it is this. Under a given accumulation of heat, as near as I can estimate an increment of from seven to eight degrees, there is an act of contraction of the whole arterial system, and especially of the extreme or terminal parts of arterial vessels, the vessels resist, there is obstruction, congestion some would call it, and as a necessary consequence there is diminished excretion or secretion from the excreting and secreting surfaces. On this follows that accumulation of water in the blood itself to which I called your most earnest attention in my last lecture. Upon the accumulation of water follows that tension of the arterial pulse which runs so steadily with suppressed secretion. Upon this often follows rapid accumulation of fluid in serous cavities, or exudation of fluid in the least resistent organs, the cellular exudations of local upon general inflammation.

"At this stage there may be another series of symptoms suddenly developed; as if the rapidly speeding engine had been suddenly reversed there may be slower motion, gradually falling temperature, and collapse. The change indicates in nearly every instance that there has been separation of fibrine in the heart. This separation has stopped or arrested the current of blood at the main, and virtually all is over. In the human subject we recognise by external signs this condition, constantly in the inferior animals we produce it synthetically, and determinate it with precision. Here, in illustration, is the dead body of a cat: in this animal there was during life an induced increment of heat or fever. The fever progressed until the mean temperature of the animal had reached an increment of nearly ten degrees, then the animal began to 'sink.' She might have struggled on hopelessly for hours, as human bodies do, but we could in her case put her quickly to death in sleep, by making her inhale the vapour of ether. We did so, and at once we laid bare and laid open the heart; see what has happened, the right cavities are almost filled with a firm separation of fibrine. Of the many similar specimens from the human subject which have been before us there is not one specimen more distinct than the specimen in our hands.

"In every sense, in respect to colour, in respect to separation of fibrine, in respect to running together of the corpuscles, the blood during induced inflammatory fever is the same as is the blood of the patient who is suffering from ordinary acute inflammatory fever.

"Such is induced inflammatory fever. We are meeting with the identity of it in every day practice on the human subject. We never see a case of acute inflammatory disease but we see the increment of heat. What we have to feel in all its fulness, and to appreciate in all its breadth, is the grand truth that every symptom, primary or

secondary, is dependent on the accumulation of the force we call heat, and that the whole of the phenomena we observe up to death itself are due simply and solely to the inability of the body, from some accident or other, to dispose of that active force which the body in perfect health sets free for the mere purpose and intent of ministering to the production of those processes which are summed up in the term life."

Treatment.

I feel that I shall be expected to say something on this part of our subject, but I assure you, gentlemen, it is that part upon which I enter with the greatest diffidence. From all the accounts of the medical treatment hitherto adopted in this disease, such treatment seems to have had very variable results, and to have been of very questionable benefit. But when we take into consideration the conclusions of various individual and collective or commissional investigations on this subject, we find they all agree in the main, that a certain percentage of animals will have the disease and die, let your measures be ever so judicious; that another percentage will have the disease more or less severe and recover completely or partially; while a third percentage will have the disease so mildly or not at all as to be unobserved, and my experience teaches me that the percentage may be apportioned equally in thirds; or when we view the disease as propagated by contagion having its periods of incubation, manifestation, and termination, or rather incrementation and excrementation with a specific immovable cause, we should soon see that, like allied specific affections in the human subject, any therapeutical interference would not prevent, but only mitigate, the various symptoms to be developed in each successive stage of the malady; and our treatment therefore, until we have ascertained the nature and properties of the virus, and how to seize upon and neutralise the poison, must always be considered mitigatory, not curative, in character.

Every attempt to prove the existence in contagious pleuro-pneumonia lymph of a particular corpuscle or a specific product appreciable by anatomical and microscopical characters, have hitherto failed, so must all experiments to test the efficacy of inoculation until we are able to say definitely in what excretion, secretion, or substance of a diseased animal's body lies the power to communicate this disease to others; for if the fluid exuded in any part of the thoracic cavity, or the consolidated diseased tissues themselves be introduced into the system of the healthy, notwithstanding any amount of constitutional irritation, or even death itself as a consequence, we fail in every case to produce hepatization of lung tissue, the most striking and invariable characteristic of the disease where received through cohabitation, or to produce a disease however mild in the least degree resembling contagious pleuro-pneumonia.

Experimenting inoculators should therefore look to some excreted educt given off from the system of an animal recovering from the malady, rather than to the passive products of the disease

as thrown into thoracic cavity, for the true transmitting element. They must also have more definite ideas as to what constitutes an infected herd. A lot of animals with the disease in incubation, although literally an infected herd, do not constitute an infected herd in the sense that they are able to communicate their approaching malady to others. The recent experiments in Norfolk are wanting in the precision I have pointed out.

Viewing the disease as a sub-acute inflammation of the lungs and pleuræ accompanied by systemic inflammatory fever, frequently inducing collapse and death from dyspnœa, typhoid symptoms and diarrhœa, I should divide my treatment into two phases—firstly, attacking the thoracic affection by counter-irritants, sedatives, and diuretics, and the constitutional fever by diaphoretics and saline febrifuge laxatives, followed, if not accompanied, by restoratives. Avoid purging, gently relax the bowels, do not push depletives or sedatives to any extent, otherwise you will only increase the exudation of fluid into the lung tissue, or the pleural sacs. Indeed I have often seen a purgative in twenty-four hours completely hepatize a lung that would otherwise have remained permeable to the atmosphere for days. Still increase of temperature in the animal body cannot be so soon lowered by any agents as by saline, sedative, and laxative medicines, nevertheless be very careful not to reduce the vital energies too much. I have sometimes thought that a little simple alterative tonic treatment without either purgatives, sedatives, or counter-irritants the best plan we can pursue.

But, gentlemen, I have no special remedy to recommend to you for this specific malady, and you will often find the butcher to the farmer the most paying prescription you can write for him. If my pathology is correct your principles will teach you what to do and what to avoid. The rest of the herd, especially if they are store animals, out of which the diseased one has come, should have a large share of your attention; examine them carefully one by one, auscultate each side of every animal's chest, and in all probability you will come upon the one that is sowing the seeds of this direful malady among its fellows. If in your auscultations you perceive any cats' purr, any cavernous leathery friction sounds, or any of those discordant tones whose harshness or metallic tinkling is indicative of pre-existing disease, or any point in the chest where there is an absence of sound, mark the subject of them as a past victim, and a future snare; separate it and all those who are known to be its most intimate associates, isolate the affected animal, and divide its associates and companions into small lots, watch them carefully, auscultate them, and if you like use setons, alternative medicines, or give them Professor Gamgee's iron powders, &c.

But above all watch them, auscultate them, and if you find in any animal a trace of disease and on further examination find it a case of contagious pleuro-pneumonia in ever so mild a form, keep it separate, if the patient recovers for at least three months from any other bovine animal.

Gentlemen, in reviewing the few remarks I have made, I cannot

refrain from again calling your attention to the chaotic confusion of ideas which seems to prevail regarding this disease, not only in the agricultural and legislative mind, but also in the leading journal of our profession. In confirmation of these three positions I must for the first appeal to each gentleman's experience; for the second, I shall refer you to the late enactments on contagious diseases and the modes in which they are carried out by the various local authorities and the veterinary department of the Privy Council, and for the third to the 913th page of the *Veterinarian* for December, 1869, wherein it is stated "that pleuro-pneumonia frequently ceases in a herd spontaneously, after having carried off a few animals, and that it will remain dormant in a herd of fifteen or twenty animals for ten or twelve weeks." To both of these statements I give a flat denial, as it never arises in this kingdom spontaneously and it never ceases but when the conditions for its perpetuation either from accident or intent are destroyed, and it never lies dormant when the healthy are exposed to the contamination of the infected. Again, in a leading article in the same number of the *Veterinarian*, hints are thrown out that the belief in the exclusive foreign origin of foot and mouth disease, as well as contagious pleuro-pneumonia, is possibly erroneous, and pleads in passing that the former appeared in England, and the latter disease in Ireland, some years before foreign stock were admitted free from tariff.

I have paid some attention to the recent enactments of Parliament and the orders of Privy Council regarding contagious diseases in animals, but I have failed to deduce to my own satisfaction under what veterinary advice or information those laws have been framed. I fully expected to have seen in them an expression of definite views regarding contagious diseases, their periods of incubation, modes of infection, best means of disposing of diseased animals, and other particulars far more precise than anything the new laws contain. It is well said in the article above alluded to "that the legislation which has been undertaken with the especial object of dealing with them has been rendered abortive, not only by the Privy Council leaving it open to local authorities to appoint police constables as inspectors, but by the divided responsibility and conflicting opinions resulting."

I should like to ask the editor of the *Veterinarian*, as the adviser of the Veterinary Department of the Privy Council, wherefore he countenances so great an injustice to the profession.

Would the advisers of the medical department of government submit that policemen should be public vaccinators—an operation requiring far less skill than the detection of disease? To whom is the credit due for pointing out the necessity for legislation against this contagious disease of animals? Not to chief constables and policemen, but to the veterinary profession in general, and Professor John Gamgee in particular; neither of these have received due recognition or acknowledgment.

Do the people and Government consider there is any economy in

the employment of men unfitted for the duty imposed upon them, or that by these means two millions annually, the cost of preventible disease of animals, can be saved to the nation's pocket?

Let the members of the veterinary profession be united, let them throw off this degrading yoke of *bobbyism*, and let Government with its veterinary department, and local authorities, with their chief constables and policemen, catch and "consign to durance vile" all the diseased animals they can find.

In these remarks, rapidly and rudely thrown together, "*notions fagotted as they fell*," I would hope that some useful suggestions for a discussion of the problems of this disastrous malady may be found.

An animated discussion followed, and in course of it an almost unanimous opinion was expressed that at least three months should elapse before the reintroduction of cattle into any locality where the disease had existed; and that, consequently, the period of thirty days prescribed by the Contagious Diseases (Animals) Act was not sufficient.

It was also unanimously agreed, that the employment of police officers as inspectors of cattle was improper in the extreme, and that such offices should devolve on properly educated veterinary surgeons, the efficient performance of their duties requiring an extensive knowledge and experience of disease in all its varied forms.

W. Barry,
Hon. Secretary.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

This Association held its quarterly meeting at Glasgow, within the Athole Arms Hotel, Dundas Street, at 2 p.m. on Wednesday, the 13th day of July, 1870. The President, Alexander Potter, Esq., occupied the chair.

Present,—Professors Williams, Fordie, and Wilson; Messrs. Anderson, senior, Anderson, junior, Cockburn, junior, Erskine, Findlay and Robb of Glasgow; Robinson (Greenock), Steel (Biggar), Laing (Falkirk), Blackie (Bellshill), Weir (Airdrie), Pollock (Coalbridge), A. Lawson (Bolton), Sharpe (Hamilton), and the Secretary.

After the minutes of a former meeting had been read over and confirmed, the President, in opening the proceedings, said that he was pleased to see present so distinguished a member of the profession as Mr. Lawson, who had come from Bolton purposely to attend this meeting, and he hoped Mr. Lawson's example would be followed by other members of the various associations on the southern side of the border. Before him lay a letter from Mr. Greaves of Manchester, regretting his inability to be with them,

which showed that at least some of our professional brethren took a marked interest in the wellbeing of our society. He thought the latter part of this letter spoke volumes for success. I shall now take my breath, added the President, at the same time wishing you success with all my heart. I feel convinced that, if conducted in a proper spirit, there is nothing that has ever taken place in our profession calculated to benefit it more than the formation of Veterinary Associations.

Mr. Anderson proposed Professor Fordie of the Glasgow Veterinary College as a member of the Association, which proposal was seconded by Mr. Robinson, and unanimously carried.

Several copies of the *North British Agriculturist* were next laid on the table, containing letters from the pen of Mr. Finlay Dun, late lecturer on Materia Medica in the Edinburgh Veterinary College. After due consideration the meeting came to the conclusion that the contents of Mr. Dun's letters were not only groundless, but gratuitous and uncalled for, and expressed surprise that these remarks should have sprung from such an eminent source.

Mr. Robinson related a case of inversion of the bladder in a mare, the result of parturition, which was attended with so much general prostration, as well as congestion of the bladder itself, that he thought it inadvisable to attempt reduction. The secretion of urine filled the vagina, and was frequently ejected over the quarters: the patient ultimately obtained the power of drawing the bladder partially back into the vagina. The Society agreed with Mr. Robinson that the best treatment to adopt in such like cases was the application of a ligature, taking care not to injure the ureters, to bring the two peritoneal surfaces together, and to allow the parts to heal by adhesive inflammation.

Mr. Lawson had a case of a curious nature in a cow; at first he thought the affection was foot and mouth disease, accompanied by emaciation, but now insalivation (no suspension of rumination) was the only symptom of note present. He had introduced the probang, but nothing abnormal could be discovered; the teeth were also rasped, and the animal treated for indigestion; still no improvement.

Mr. Robinson had had a similar case under treatment; thought at first the gastric mucous membrane was the seat of disease, but he ultimately came to the conclusion that chronic inflammation of the salivary glands was the cause of the increased salivation. Applied a seton and counter-irritation to the neighbouring parts: the case resulted favorably.

Professor Williams brought to the Society's notice the numerous specimens of cancerous deposit sent to the College from Berwick. He was inclined to believe that this disease was peculiar to that district. A short time ago he removed from the mammæ and stifle cancerous humours weighing 21 lbs. The case terminated fatally.

Professor Wilson next read his paper on wounds considered pathologically and therapeutically. The discussion on the paper was deferred until the Society's next meeting.

D. Maclean, *Honorary Secretary.*

ORDER OF COUNCIL

RELATING TO IMPORTATION OF CATTLE FROM FRANCE.

At the Council Chamber, Whitehall, the 9th day of September, 1870.

By the Lords of Her Majesty's Most Honorable Privy Council.

Present: Lord Northbrook, Mr. Forster.

The Lords and others of Her Majesty's Most Honorable Privy Council, by virtue and in exercise of the powers in them vested under The Contagious Diseases (Animals) Act, 1869 (in this Order referred to as the Act of 1869), and of every other power enabling them in this behalf, do order, and it is hereby ordered, as follows:

1. This order shall take effect from and immediately after the fourteenth day of September, One thousand eight hundred and seventy, and words in this Order have the same meaning as in the Act of 1869.

2. Subject to any Order of Council to the contrary (either of previous date to this Order or hereafter made) all the regulations in the Fourth Schedule to the Act of 1869 shall apply to cattle brought from any port of France; and, subject as aforesaid, all such cattle shall be slaughtered within ten days after the landing thereof, exclusive of the day of landing.

(Signed) Arthur Helps.

IMPORTATION OF CATTLE, SHEEP, AND GOATS FROM FRANCE AND STATES OF THE NORTH GERMAN CONFEDERATION.

At the Council Chamber, Whitehall, the 20th day of September, 1870.

By the Lords of Her Majesty's Most Honorable Privy Council.

Present: Mr. Cardwell and Mr. Forster.

The Lords and others of Her Majesty's Most Honorable Privy Council, by virtue and in exercise of the powers in them vested under The Contagious Diseases (Animals) Act, 1869 (in this Order referred to as the Act of 1869), and of every other power enabling them in this behalf, do order, and it is hereby ordered, as follows :

1. This Order shall take effect from and immediately after the twenty-third day of September, One thousand eight hundred and seventy, and words in this Order have the same meaning as in the Act of 1869.

2. Subject to the provisions contained in the Orders of Council relating to the ports of Granton, Leith, and Southampton, dated the tenth day of August, One thousand eight hundred and sixty-nine, all the regulations in the Fourth Schedule to the Act of 1869 shall apply to sheep and goats brought to Great Britain from any port of the States of the North German Confederation or France, and landed in Great Britain, and all such sheep and goats shall be slaughtered within ten days after the landing thereof, exclusive of the day of landing.

3. With respect to cattle, sheep, and goats brought from any port of the States of the North German Confederation or France, and landed within the Port of London, the following regulation shall have effect, in addition to those contained in the Fourth Schedule to the Act of 1869 :

" No such cattle, sheep, or goats shall be landed except at places approved by the Commissioners of Her Majesty's Customs, and set apart for such purpose, and, notwithstanding any Order of Council to the contrary, no animal shall be moved alive out of any place so approved and set apart.

ARTHUR HELPS.

Veterinary Jurisprudence.

ALLEGED DEATH FROM GLANDERS.

An inquiry was held on Tuesday, September 6th, at Guy's Hospital by the Southwark and City coroner, Mr. W. J. Payne, respecting the death of a man named King, in the employ of the London, Brighton, and South Coast Railway Company, stated to have died from poison received into his system from a glandered horse.

Abraham King, the son of deceased, said his father was taken ill a fortnight since, and declared that he had "farcy," meaning that he was infected with a disease peculiar to horses. Deceased said he had been attending to a glandered horse, and supposed he must have poisoned himself by scratching his leg, for his right leg had sores upon it, and was greatly swollen.

Mr. Stanley, veterinary surgeon to the London, Brighton, and South Coast Railway Company, produced a certificate from his *locum tenens* stating that the horse alluded to was not glandered.

Samuel Barnes, in the employ of the company in this department, stated that there had been no case of glanders among the horses of the company.

The medical man, *Mr. Holdham*, who attended upon deceased at the hospital, stated that the disease which caused the deceased's death had all the appearances of glanders.

Henry King, a son of deceased, who worked at the same place as his father, said that the horse was much swollen in the hind legs, and had every appearance of "farcy." The jury returned a verdict that deceased "Died of exhaustion consequent upon catching glanders from a diseased horse."—*Times*.

CONVICTION FOR NEGLECTING TO GIVE NOTICE OF THE EXISTENCE OF FOOT AND MOUTH DISEASE.

On Saturday, September 17th, James Bodger, cowkeeper, of Isleworth, was summoned before the Brentford bench of magistrates for not having given notice of the outbreak of the foot and mouth disease among his cattle, as required by the statute.

Mr. Jasper Hinge, veterinary surgeon and inspector, said from information received, he went to the premises of the defendant, and there found two cows suffering from the foot and mouth disease. There were nine others, seven of which had had the disease and recovered.

The defendant pleaded ignorance of the provisions of the Act, and admitted that nine of his cows had had the disease. The Chairman impressed upon the defendant the importance of giving immediate notice to the inspectors or to the police of the outbreak of the disease, and said under the circumstances the Bench would inflict only a light fine this time—viz., 40s., including costs, or one month's imprisonment in default. The money was paid.

Referring to this prosecution, the *Echo* of Sept. 20th says that "It is hardly possible that a cow-keeper should be ignorant of the provisions of an Act mainly designed for his own benefit. An Isleworth cow-keeper was, however, charged on Saturday last with having neglected to give due notice to the inspector of that district that his cows were suffering from foot and mouth disease. Two cows in his sheds were found to be actually diseased, while seven were in various stages of recovery. The Brentford Bench admitted the plea of ignorance, and imposed the absurd fine of 40s. and costs. Cowkeepers have no business to be ignorant of sanitary law. Such ignorance is culpable in itself. And, as milk from diseased cows is simply a virulent poison, we hope that, although ignorant of law, the cow-keeper had yet sufficient sense of right not to offer diseased milk to his customers."

ARMY APPOINTMENTS.

6th Dragoons.—Veterinary Surgeon, First Class, George Longman from Veterinary Department, to be Veterinary Surgeon, vice Owles, promoted.

Veterinary Department.—Veterinary Surgeon, First Class, Thomas Paton, from late Cape Mounted Riflemen, to be Veterinary-Surgeon, First Class, vice Longman, appointed to the 6th Dragoons.

James Augustus Wood to be Acting Veterinary Surgeon.

THE NEW REGISTER.

10, *Red Lion Square, W.C.*

Gentlemen,—I shall feel obliged by your kindly permitting me through the medium of your valuable Journal, as Registrar of the Royal College of Veterinary Surgeons, to inform the members of the profession, more especially those who have recently entered upon its duties, that a new Register will shortly be published, and to request that any corrections, or authenticated notices of deaths, should be forwarded to me with as little delay as possible.

At the same time I wish to draw attention to the County List, in which many inaccuracies have occurred from members not having reported their change of residence.

I am, &c.

Wm. Henry Coates,
Secretary and Registrar.

To the Editors of the 'Veterinarian.'

LETTER FROM "QUÆSITOR."

[We have received the following from "Quæsitor."]

In the course of your extended practice have you met with many cases of what are commonly called "Kidney droppers"? I have looked through the *Veterinarian* from 1828 to 1856 (the only numbers that I can just now refer to) without meeting with a single description of such a one. From this I infer that the malady is not common. Perhaps you, or some of the readers of your Journal, may be able to furnish some information concerning the disease which receives this very curious and vulgar name.

DISHORNING CATTLE.

We have been asked by Professor Williams to call attention to a question put by Mr. Ernes, in a foot-note to his "Translations," at page 703 in our last number, relative to the evidence given by Mr. James McKenna, in a prosecution for dishorning of cattle, to the effect that if the horns be cut off "close to the skull a portion of the brain might protrude without resulting in death."

Mr. Ernes asks, "Is this the teaching of any of the schools?" To which Professor Williams replies, "Certainly not in Edinburgh," and to this we may add that we hope nowhere else.

MISCELLANEA.

CATTLE DISEASE IN CANADA.

Dr. Andrew Smith, veterinary surgeon, who, instructed by the Government, has visited various places in the west of Canada, where the cattle have suffered most severely, reports that the cause has been the attack of flies, and that cold autumn weather will bring relief. The fatal cases have usually occurred where there has been neglect to apply proper dressings. The expedition to Fort Garry, shortly before arriving at its destination, encountered an extraordinary cloud of white flies. For about four or five feet above the river, the air was so thick with them as to give the boats the appearance of being in a heavy snowstorm. This lasted for some hours, and the surface of the water was thickly strewed with them as they cast their skins and died.—*Times.*

EFFECTS OF CATTLE DISEASE.

The *Wilts and Gloucestershire Standard* remarks that we are losing food, and the farmers are, therefore, losing the value of that food, in consequence of the foot and mouth disease and pleuro-pneumonia, to an extent which would be equal to a rise of 10s. on a low estimate or 14s. on a high one on every quarter of wheat that we shall require to import between this and next harvest; to say nothing of the deterioration of the quality of a very large quantity of the meat which is not actually condemned as diseased, the value of which it is not easy to estimate.

OBITUARY.

Recently, from disease of the heart, Mr. Charles Fraser, M.R.C.V.S., of Limerick. His diploma bears date 1841.

Mr. John Kay, M.R.C.V.S., of Pontefract. Diploma bears date April 21, 1843.

Mr. Thomas Todd, M.R.C.V.S., of Leith. Diploma bears date April 26, 1865.

Mr. Frederick Hardman, M.R.C.V.S., of Epping, Essex. Diploma bears date May 12, 1847.

Mr. George Hogarth, M.R.C.V.S., of Berwick-on-Tweed. Diploma bears date April 20, 1842.

Mr. David Brownlee, M.R.C.V.S., of Coalbridge, Lanark. Diploma dated April 24, 1844.

And a short time since, Mr. Alexander Grey, M.R.C.V.S., of Edinburgh. Diploma dated March 28, 1812.

We regret to have to add to this list the death by drowning of Mr. R. C. Cleveland, M.R.C.V.S., Wymondham, Norfolk, which melancholy event occurred on the night of Sept. 14th, on his way home from Norwich, where he had been engaged during the day as one of the players in a cricket match. His diploma bears date April 28, 1862.

THE

VETERINARIAN.

VOL. XLIII. No. 515. NOVEMBER, 1870. Fourth Series. No. 191.

Communications and Cases.

OPENING OF THE SESSION 1870-71 AT THE ROYAL VETERINARY COLLEGE.—INTRODUCTORY ADDRESS BY PROFESSOR TUSON.

Mr. Chairman and Gentlemen,—It has been truly said that "some men are born to greatness, that others acquire greatness, and that others have greatness thrust upon them." If for "greatness" the word "prominence" be substituted in the foregoing quotation, then I may be said, in some measure, to belong to the last-named class of persons; for the position I have the honour to hold at this moment has been thrust upon me, inasmuch as it ought, as a matter of routine, to have been occupied by one of my senior colleagues, who, from his intimate knowledge of the diseases affecting our flocks and herds, could have far more successfully than I can pretend to do delivered an address which would have proved acceptable to our old friends the practitioners, as well as to those young gentlemen who are commencing their collegiate studies. Having no such resources at my command as those possessed by my more fortunate colleague, I must ask the passed students and the visitors, both of whom we thank most heartily for their presence here to-day, to kindly bear in mind that the special object of an inaugural address is to briefly unfold to the new pupils the course they will be required to pursue during their sojourn at College, to point out to them the nature of their duties, as well as to indicate to them how such duties may be best and most agreeably performed.

To you, then, gentlemen, whom I may congratulate upon

having just passed your Matriculation Examination I beg more particularly to address myself, in the sincere hope that the remarks I have to offer will prove of service, by suggesting how your time while students may be most pleasurably and profitably spent, and how in after life you may adorn and elevate the important profession to which you aspire to belong.

This Institution has been established for more than two thirds of a century, but during the greater part of this period no proof was required of the possession of a scholastic education by those desirous of becoming its pupils. Five years ago the Governors, inspired by the educational spirit of the times, passed a regulation by which it was rendered compulsory for every one, prior to being admitted on the roll of students, to give evidence of their proficiency in dictation, reading aloud, and the first four rules of arithmetic. For five years this examination has been conducted by the professors; and so satisfied have we been of the good effects resulting from the new regulation, that we recently suggested to the Governors that it would be desirable to gradually increase the extent and stringency of the Matriculation Examination, and that the responsibility of conducting it might be transferred from our shoulders to those of some independent body. Such suggestions have been adopted, and it is now the pleasure and satisfaction of my colleagues and myself to know that, previously to the opening of the present session, the Matriculation Examination has been, and that it henceforth will be, entrusted to the College of Preceptors, a body of gentlemen well known for their long experience in testing the preliminary or scholastic knowledge of large and many classes of persons, including those desirous of entering the sister profession of human medicine.

Of the great importance of a sound preliminary education to the veterinary student there can be no question. Without it the reading of medical works must be of little use to him, as he is unable to comprehend, not only the arguments of his authors, but even the meaning of many of the words which they necessarily employ; and from the absence of that mental training which a good education effects, he fails to recognise general principles and the inestimable value of the influence which they exercise upon his art. Moreover, so long as the veterinary student remains uneducated his attendance on lectures becomes distasteful and unprofitable from the difficulty he experiences in understanding his teachers, while the labour of the professors, let the interest which they throw into their work or

their power of imparting knowledge be ever so great, is rendered irksome and unsatisfactory from observing the slow progress made by their pupils.

No matter how simple or how elementary the teaching may be, it will prove but partially productive unless the student by his previous educational training be properly prepared to receive instruction. As well might one expect a luxuriant crop from casting seeds into a barren or imperfectly tilled soil.

To be thoroughly competent to diagnose and treat the diseases of the lower animals in all their phases, the amount of medical knowledge required is not less than that essential to the practitioner of human medicine. If, therefore, "Knowledge is power," and if it be admitted that the preservation of the health of domesticated animals is only second in (at least national) importance to the maintenance of the health of man, I see no reason why the veterinarian should, if he but possess the right kind of ambition, occupy a social position in any way inferior to that of the physician or surgeon. To occupy such a position, however, not only must it be manifest that he is thoroughly conversant with the theory and practice of his profession, but he must also adopt the language, manners, and costume of a gentleman. While courteous in his demeanour to all classes of persons with which he may come in contact, he must have a pride above associating with grooms, coachmen, and jockeys. In other words, "to be held in esteem, he must associate with those only who are estimable."

There may be some of my audience, as I know there are persons elsewhere, who are opposed to youths intended for the veterinary profession receiving more than what is commonly called "a plain English education," by which I suppose is meant just sufficient reading, writing, and arithmetic for the purely business purposes of life. Such objectors say that if the veterinary student be highly educated he will be over-refined and unwilling to perform many of the unpleasant and offensive duties incidental to his pursuit; that, in fact, to use a common expression, he will be above his work. To persons holding these opinions I would say that, experience in human medicine, at least, has long since proved the contrary to be the fact, and that the better the general and scientific education, and the greater the true refinements of the medical man, the greater is the interest he throws into his work, and the more ready is he to perform with his own hands operations and *post-mortem* examinations which for offensiveness are far worse than any performed by the vete-

rinary surgeon. A liberal education is likewise opposed by some on the ground that it "won't pay." If a man enters the profession with the idea of simply and solely using it as a means of making money, and so degrading it to the level of a trade—if, in other words, his only object be to make a fortune—then, perhaps, to such as he the time and money expended upon the attainment of a good education may not possibly yield that pecuniary return to which, commercially considered, he may consider himself entitled. But though he may succeed without such acquirement in "doing a good trade," he will, in the absence of education, fail to obtain that social position which it should be the pride of every professional man to endeavour to gain. Moreover, he will be poor in knowledge, which alone affords pleasures that wealth cannot procure, which poverty cannot take away, and which, in the leisure moments of the possessor and when he withdraws from active work, supplies that resource which constitutes healthful pastime, and that true and never-ending happiness for which the mere money-maker may sigh in vain. Therefore, let the acquisition of knowledge be your constant aim, and to apply it with wisdom your constant endeavour; for—

> "Knowledge, when wisdom is too weak to guide her,
> Is like a headstrong horse that throws the rider."

In the hope that I have said sufficient to enforce the claims of a good general education on your attention, let me now advert to some of the studies with which you will be required to busy yourself during your pupilage within these walls.

The subjects to which you will have to give your attention are anatomy, chemistry, physiology, materia medica, pathology, and the practice of medicine and surgery, so far as they relate to the treatment of the maladies affecting what are conventionally termed the domesticated animals.

If a man undertakes to repair a steam engine it is obvious to every one that, in order that he may successfully perform his task, he must previously possess an intimate knowledge of every part of a similar engine in perfect working condition, of the relative positions which each part of the structure must occupy, and of the offices which such parts have to perform during the action or working of the machine. So with yourselves, you hope some day to be entrusted with the repair of the health of animals, and in order that you may perform your duties with satisfaction to your clients and with confidence to yourselves you must, during your studentship, become thoroughly acquainted with the structure and relative

positions of the various parts, that is, the anatomy, of the lower animals, and of the functions or physiology of their organs. Too much attention cannot be paid to these subjects, for without a sound knowledge of them the practice of medicine becomes empiricism.

For the proper understanding of physiology, as well as for the comprehensive application and advancement of most other branches of medical knowledge, an acquaintance with chemistry is demanded.

Unfortunately for this science, and unfortunately for medicine generally, the majority of medical men either neglect chemistry as much as possible or are content with a mere smattering of it, and consequently, as is invariably the case with those possessing but little information on a subject, they fail to realise its importance. Were our students required to render their acquaintance with chemistry as thorough and as practical as they are that of anatomy, by pursuing a course of laboratory instruction, most of the difficulties which beset the path of the beginner would be removed, and an interest, which the mere attendance on lectures fails to engender, would be excited in a branch of knowledge which has contributed, and which is capable of contributing, more than any other to the progress of practical medicine. In proof of the correctness of this assertion I might refer you to the works of Dr. Parkes, Dr. Garrod, Dr. Ballard, and others, wherein you will find records of pathological, physiological, and hygienic investigations of the highest importance to all engaged in the preservation of health or the cure of disease, and of which we should have been deprived had not these gentlemen been sound practical chemists as well as experienced medical practitioners. In evidence also of the high estimation in which practical chemistry is held by our leading military medical men, I may state that every army surgeon, before he is permitted to join a regiment in his official capacity, is compelled to work for several months in the laboratories of the medical school attached to the Royal Military Hospital at Netley, notwithstanding that he is already in possession of the diploma of the Royal College of Surgeons or of some similar body.

Inasmuch, then, as chemistry, together with anatomy and physiology, constitute the only secure basis for rational medical knowledge, let me again commend them to your particular attention, and at the same time express the hope that before long the veterinary student will be required to devote the whole of his first session at College to their study; for beyond the direct benefit which the natural and experimental sciences

are capable of conferring on the medical man, they, if systematically and practically followed, develop habits of accurate observation, correct deduction, and sound generalisation, qualities which are of the utmost importance to every one making the practice of medicine the pursuit of his life. To the superficial observer there are many subjects in the curriculum which have no bearing on the practice of medicine. There is not one of them, however, which is not, directly or indirectly, of the greatest importance in this respect. A knowledge of the collateral sciences, says Dr. Beale, "is of the same importance to medicine and surgery that an intimate acquaintance with grammar is to a knowledge of classics; and just as an idle schoolboy may read from a translation the meaning of the words, so a dishonest man may pass himself off as a practitioner by the use of high-sounding terms, whose meaning he has never had the industry to learn."

Medical knowledge, however, must be progressively obtained. By which I mean that it is impossible for you to obtain more than a superficial acquaintance with therapeutics, pathology, the principles of medicine, and the other advanced branches of the curriculum, unless you have previously received a thorough training in those preliminary subjects to which I have alluded as constituting the foundation of all sound medical knowledge. It is true that a practice may be conducted without such information, and that it may be accompanied with what the world calls success, but it is then carried on empirically, and therefore in a manner unworthy of those who desire to be considered reflective and rational men.

The more general knowledge a man possesses, the greater is his eagerness for increased information; it is only the ignorant or half-instructed, who "hate the excellence they cannot reach," that refuse to acknowledge the beneficial influence of an extended literary and scientific education on the practice of medicine.

The men who occupy the highest positions in human medicine are those who, by their accomplishments, have been enabled to take that thorough interest in their pursuit which is followed by the love of investigation, and attended by the industry to undertake it. Such men are not content with acquiring the knowledge furnished to them by their predecessors, but by their own labours they seek to increase it, so that they may enjoy superior opportunities of alleviating the sufferings of their fellow-men.

It is in this manner that a comparatively few well-trained, earnest, and hard-working men have raised the profession

of human medicine to the proud position it now occupies, and it is by similar means I sincerely and earnestly hope the profession of veterinary medicine may be ultimately elevated.

Hitherto I have spoken only of the preliminary studies to which you are, or to which you will, I trust, eventually be required to devote your attention during the earlier part of your career as veterinary students.

My object in doing so has not been, as some of my auditors may suppose, that you may become pure theorists, but that you may possess that extended knowledge which alone can make you self-reliant and sound practitioners, as well as competent to undertake research, so that whenever a rare or imperfectly known epizootic makes its appearance the duty of investigating it may be committed to your charge, and not to that of the physician or surgeon, as was chiefly the case during the comparatively recent outbreak of cattle plague.

No, gentlemen, I do not advise you to become pure theorists, but I do hope that you will not fall into the opposite extreme of becoming purely so-called practical men. Endeavour to combine theory with accurate observation; then you will be practical in the true sense of the word, and be able to appreciate and profit by the labours of others in the more abstract branches of medical science.

In a former part of this lecture I stated that you will be required to attend lectures on pathology, medicine, and surgery. The knowledge you will thus acquire must be supplemented and confirmed by patient and unremitting attendance in the infirmary and *post-mortem* house. You must not consider that the "going round" with the professor in charge of the patients is the only duty demanded for the improvement of your knowledge of the recognition and treatment of disease, but you must find time to watch the cases for yourselves, to make your own notes upon them, and to discuss them with your fellow-pupils. You should also submit your notes to the revision of your teachers, who, I assure you, are far from considering their duties towards you to have terminated with the delivery of a lecture, but are desirous of giving you every information in their power, and aiding you by their counsel and advice on all possible occasions.

Having told you *what* to learn, let me offer you some advise on *how* to learn.

The great thing to bear in mind in the pursuit of knowledge is that it cannot be obtained without pains and application. "It is troublesome and deep digging for pure

waters; but when once you come to the spring, they rise up and meet you."

Knowledge, to be real, permanent, and practically useful, must be gradually and systematically acquired. No amount of "cramming" will make up for idleness, desultory reading, or irregular attention to duty. My advice to you is, that you should draw out upon paper a plan, showing what time you have to devote to lectures and the other duties here, and what time you have to spare for study at home. In such plan so allot the time not spent at College that you may be enabled to carefully read up each of the subjects treated in the lectures and clinical instruction, and let your reading be so conducted that when you close your book you will find, on self-examination, or on being questioned by others, that you have thoroughly mastered the meaning of your author. Unless you do this, reading is but waste of time.

Speaking for myself, and doubtless what I am about to say applies to my colleagues, every session I so systematise my course of instruction that I am enabled at the close of one lecture to announce to the class the subject of the next, the object being to give the pupil the opportunity of preparing himself for the coming lecture by reading up the leading topics to be discussed. This plan I hold to be of great importance to the student, for it is only by repetition that knowledge is gained, and he is thus, if he but adopts the system suggested, enabled to prepare for lectures by what may be termed light reading, the next day he receives a verbal explanation of the subject according to the teacher's light, and he afterwards thoroughly makes the knowledge thus acquired his own by carefully reading up the subject in the manner already described. Recollect that the "object of a course of lectures is to induce the auditor to think, and to consult works on the subject he hears treated."

With regard to taking notes during the delivery of a lecture, I would suggest that, unless you possess the power of doing so with great facility, it had better be left undone. Your attention, instead of being divided, may then be concentrated upon the topics discussed by the lecturer.

Such are the principal points to be attended to, in order that you may pursue your course of study in a methodical and profitable manner. Experience and consultation with your teachers will suggest others of minor import, to which, however, it will be equally your duty to attend.

Let me now, gentlemen, direct your attention to some of the improvements which have taken place in this institution

during the last few years, in order that you may be in a position to estimate and appreciate the superior advantages which the student of the present day enjoys for obtaining a knowledge of veterinary science over those possessed by his predecessors. Ten years ago, when I was appointed to the professorship I have now the honour to hold, we had an indifferent lecture-theatre, an indifferent museum, an indifferent dissecting room, an indifferent *post-mortem* house, and a wretched laboratory. At the present time, although there is still room for considerable improvement, we nevertheless possess appliances which, for all the practical purposes of teaching, are I believe, surpassed at few medical schools in the kingdom. In proof of this I may refer you to the theatre in which you are now sitting, as well as the new museum, laboratory, dissecting room, and *post-mortem* house.

Having such appliances placed at our disposal, it becomes your duty as students to lose no opportunity of availing yourselves of the advantages we have to offer, so that you may do credit to our teaching, and acquire that information which you are bound, by interest to yourselves and duty to those who send you here, to obtain. At the same time it becomes our imperative duty as teachers to turn such appliances to the best possible service for your benefit and that of the profession at large, not merely by using them as aids to tuition, but also by enabling us to excite in the rising generation of veterinarians an interest in scientific investigation. "Knowledge always desires increase; it is like fire, which must be first kindled by some external agent, but which will afterwards propagate itself." May we, the teachers, both by our precept and example, kindle within you that desire for knowledge which will induce you to throw your whole hearts into your work, so that you may not only perform your professional duties with credit, but that by your investigations you may contribute to the elevation and progress of your calling.

Permit me now very briefly to refer to the opportunities for improvement which are open to you by becoming members of the Veterinary Medical Association—a society possessing a library of medical works, a collection of microscopes and microscopic apparatus, and at whose weekly meetings pathological specimens are exhibited and essays read and discussed.

The advantages arising from association and discussion with those possessing kindred tastes and following the same pursuit are of the utmost value in eradicating false notions, in developing fresh ideas, and in giving precision to the

modes of expressing views and experiences. Association and discussion likewise excite that desire for excellence and increased information which, if satisfied, is invariably followed by progress. I would, therefore, strongly advise you to become members of the Veterinary Medical Association, whose meetings, by the kind permission of the Governors, are held in this theatre.

I cannot conclude without again adverting to the deep interest taken by the governing body of this College in all that concerns its advancement and success. In fact, a mere enumeration of the improvements effected by their liberality and energy during the last ten years, in every department of the institution, as well as their demanding an improved preliminary education on the part of its pupils, must be ample proof to the public, the profession, the teachers, and yourselves, that if it can be clearly shown to them that reforms and improvements are needed they do not hesitate, but are, on the contrary, most willing, to carry them into effect.

And now, gentlemen, in taking my temporary leave of you, let me hope that not only during your residence in this "city of temptations," but during your whole lives, you will so conduct yourselves that you may at all times be enabled to say—

> "I feel within me
> A peace above all earthly dignities—
> A still and quiet conscience."

A REMINISCENCE OF THE CENTRAL VETERINARY MEDICAL SOCIETY AND ITS FIRST SUBJECT.

By Thomas Greaves, M.R.C.V.S., Manchester.

I had the honour to receive a special invitation, and felt it a great privilege, to be present at the meeting of the above Society held in Lower Seymour Street, on the evening of October 4th. To me it was a gratifying sight to see so good a muster of our metropolitan brethren, and to their honour be it said, several of the teachers at our *Alma Mater*. It is because I have had a considerable experience in these societies in the three kingdoms during the last ten years, and am more and more satisfied of the good they are capable

of conferring upon our brethren socially, and the great advantage that must accrue from them professionally, if only they are conducted in a right spirit, that I speak thus. We have in these meetings an opportunity of getting possession of the knowledge and practical experience of a number of individuals; they bring with them and give you at once information upon the subject before you, which has taken years to acquire. If knowledge is power—if by gaining the most useful practical ideas and using them we become more successful in our daily practice, and more useful members of society generally—if this be the fact, then, I say, surely there is no right-minded man who will not join me with heart and voice and echo the noble sentiment, "God speed the above Society." It is because I am convinced of the great value of these societies that I commend them with all my strength. Let there be found but few, very few, veterinary surgeons in London who will give this Society the cold shoulder. Some may be naturally bashful and diffident; some assume their experience and knowledge to be of a far superior quality to that of others, and desire no more knowledge themselves, while their innate selfishness will not permit them to impart the information they possess; of such men I have little to say, but only to hope they are a rarity in London.

I congratulate the Society upon the choice of its officers. They are men of the right mettle; no labour is too much, no sacrifice of time too great for them, if only they see they are doing some service to their profession. But do not, I pray, permit them to endure the heat and burden of the day alone; let every member feel he has a duty to perform in putting his shoulder to the wheel and help on the good work.

The paper read before the Society by Mr. Hunting, on "The Growth and Structure of the Horse's Foot," was a most instructive one, and reflected great credit upon the author. It being a physiological question, its consideration would no doubt be felt to be a dry subject to some, and especially to old practitioners.

The discussion which followed was chiefly directed to two or three points upon which I would wish to make a few observations.

1st. *Are the horn laminæ produced by the sensitive laminæ?*

For some years I have studied this question carefully, having had many opportunities afforded me. I have watched it with a deep interest, and am quite satisfied that the wall and horny laminæ can be produced perfectly when not a vestige of sensitive laminæ exists underneath. To conclude

that the horny laminæ are produced by the sensitive laminæ would be as great a fallacy as to conclude that the fœtus was produced by the maternal membranes. Whether the horny laminæ, after they are formed, are in some degree nurtured through the medium of the sensitive laminæ, as the fœtus is nurtured from the maternal membranes, is a point I am not prepared to decide, but my opinion is they are not. I am of opinion that the connection between the sensitive and horny laminæ is an adhesive, not an organized attachment; that is, no blood-vessels or nerves pass from one structure to the other, or decussate; and that if any nutrition is transmitted or emitted, it is on the principle of endosmosis and exosmosis.

2nd. *Can the wall or horny laminæ be produced by any other tissues than the coronary cushion and zone?*

To this question I unhesitatingly answer no; such is an utter impossibility. I have in numbers of instances in which the above-named structures have been for a certain space entirely destroyed, or so injured they ceased entirely to develope wall or horny laminæ, seen a thin layer of horn form upon the sensitive laminæ, and even when there was no sensitive laminæ whatever underneath; but this was not wall, there was an absence of horn tubes or fibres. I call it horny excrescence, Mr. Fleming calls it horn tumour; I have known it to become so thick as to be able to nail through it. In all these horny excrescences there is also an absence of horny laminæ.

3rd. *Are the sole and frog destined by nature to bear pressure?*

The answer to this is, in my opinion, self evident. That there may be some feet of extreme concavity with hoofs never lowered which upon a hard surface it is impossible for the soles to come to the ground I admit, but these should be rather looked upon as malformations than otherwise. We must not forget that the foot in a state of nature is never in this state; the hoof is always kept worn down to a level with the sole; there is a diffused pressure over the sole and frog which always bears a portion, if not a large portion, of the weight.

As regards the shoe being fitted so as to bear upon the sole, I would say that it is an infliction of pain, although I strongly condemn too much seating and too great a space between the shoe and sole; still there is a great variety of forms of feet—feet, for example, with flat soles naturally—which soon suffer from the continuous pressure of the shoe producing what is known as *sole pinch;* pain and lameness are the result.

4th. In conclusion, I beg to notice a particular that was not alluded to, but which is really of greater importance than is usually considered, viz., the injurious effects of rasping the front of the hoof. By removing the outside skin (like removing the bark of the tree) the horn loses its nature, and becomes brittle and weak. If you want a proof, only observe the toughness and the power of resistance to wear in the foot of the colt never rasped, and a foot (when barefoot) that has been in the habit of being rasped for some time: I maintain that there is no known substitute, either from the animal, vegetable, or mineral kingdoms, which can compensate for this loss of horn skin.

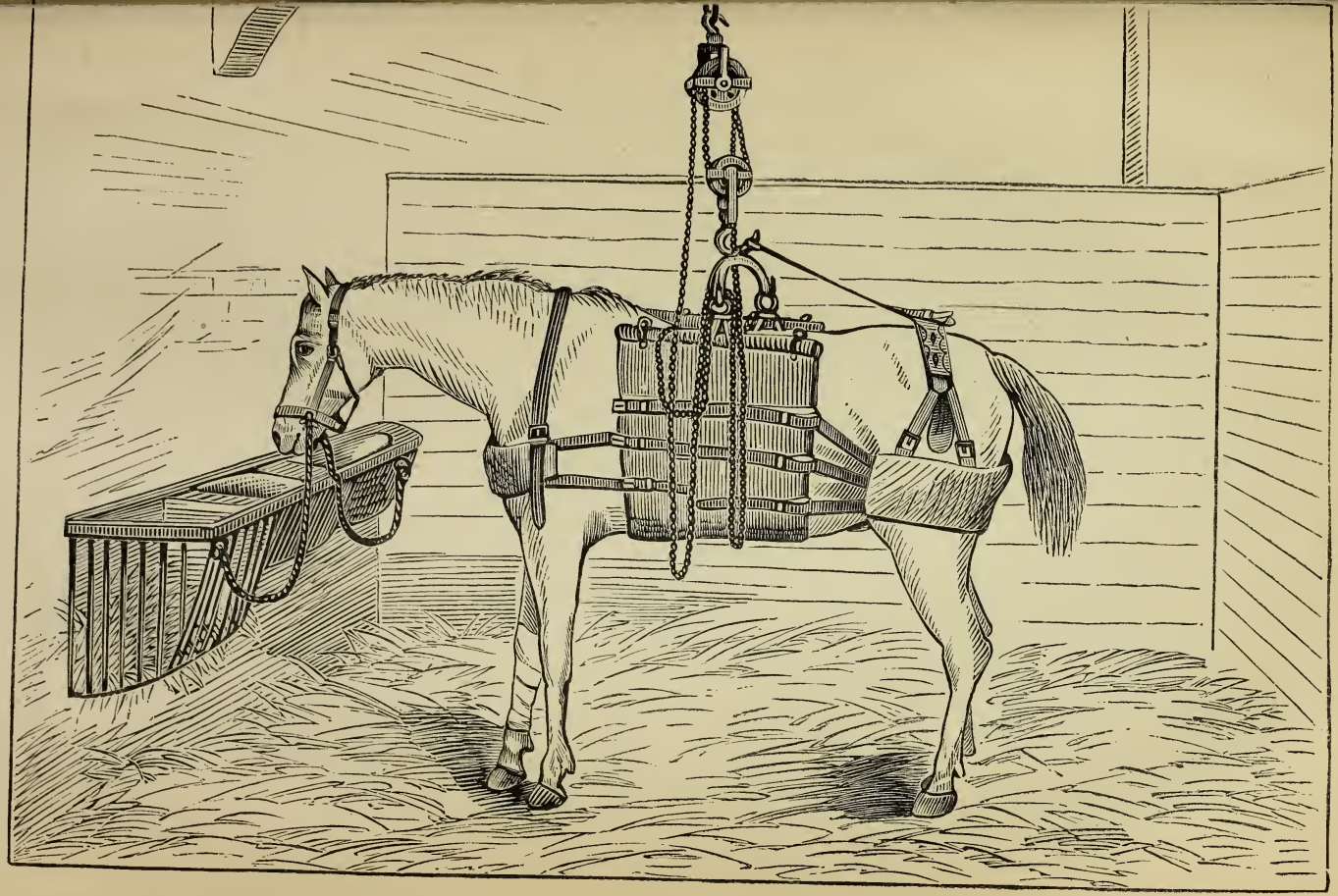
ON SLINGS AND SLINGING.

By Alfred Broad, M.R.C.V.S., London.

The subject of suspending horses in slings is, without doubt, of sufficient importance to admit of much being said upon it by any one thoroughly competent, by experience, to deal with it; but I trust the incompleteness of these few remarks will be overlooked in my endeavour to bring the matter into notice. Slings are of service to the veterinary surgeon in many cases,—in fact, without their aid, he could scarcely attempt to treat many cases of fracture and other injuries with a fair prospect of success; but by their use he can often succeed in restoring his patient to a state of usefulness. For these and other purposes it is important that the slings should be of good construction, and well adapted to support the animal with as much ease to himself as possible. Among the cases in which slings are especially serviceable are those of fractures of the limbs, open joints, partial paralysis, and inflammatory œdema, particularly when infiltration has taken place into the areolar tissue of the limb to an extent as to prevent flexion of it. They are also of great advantage in cases of extreme weakness, when the animal is scarcely able to stand, or when down, barely able to rise again, as sometimes results from an attack of influenza or other debilitating diseases. I have known horses become so prostrated from influenza as to be quite unable to stand for many minutes together, but which on being put into the slings have gradually regained their strength and recovered. It is a well-known fact that when horses become so debilitated as to be compelled to

lie down, they get, when in that position, weaker and weaker till they become quite exhausted, and incapable of rising. Such animals generally succumb to the disease, assisted as it is by the sores and pain produced from lying, and the cramped position of the chest; whereas if raised and placed in slings, perfect recovery frequently results. Slings are sometimes employed in tetanus, when the horse seems likely to fall, or if he can be raised after having fallen, yet not, I fear, with very favorable results in the majority of cases; still, if there be any chance of the animal recovering after having arrived at that stage of the disease, he will be more likely to do so when supported by slings, provided only that he will stand quiet in them. Slinging is useful, as I have said, in some cases of partial paralysis of the hind parts; but when the disease in any way approaches complete paraplegia, the recumbent position is more favorable to recovery, for when in the slings, through the hind legs being incapable of supporting any of the weight of the body, the animal completely hangs in them, and the abdomen in consequence is dangerously compressed. I have given a rough sketch of the mode in which horses are slung at our establishment, which differs considerably from the arrangement depicted and described in Percivall's Hippopathology, that being the only illustration of slings given in any work with which I am acquainted, and though it is a fair representation of the slings as used at that time, it cannot be taken as a correct example of them as now modified and improved (*see woodcut*). Simplicity of construction and strength being two points especially advantageous, it is a great advantage to have the apparatus as simply constructed as possible, so long as it answers all the purposes necessary. To constitute good slings, all that is required is a piece of sacking or sailcloth to pass under and support the body, fastened round two stout rods, one at each end, with eyes attached to them, a cross bar to connect these, two leather bands fastened by straps to the sailcloth, one to pass round the front of the chest, the other round the hindquarters; also two straps passing up from these, one over the withers, the other over the hips to keep the bands in position, and pulley apparatus to support the whole.

The sailcloth or supporting girth should be about five feet ten inches long, and two feet nine inches wide; that which is represented in the drawing is a trifle too narrow. A wooden rod, about two inches in diameter, should be sewn in at each end of the girth, and to the centre of this an iron-guarded rope-eye should be fastened, so as to attach it to the hooks of the cross-bar, which bar should be made of a stout piece of round iron, slightly bowed upwards, and flattened at the centre,



where a hole should be pierced to receive the lower hook of the pulley. Each end should also be tapered and curved in the form of a hook to suspend the eyes of the belly-band; its length in a straight line from hook to hook should be about two feet six inches.

The outside of the girth, where it is adjacent to the ribs, should be covered with leather, to strengthen it for the attachment of the buckles, of which six should be fastened to it, three directed forwards, and three backwards. It is also a great advantage if, instead of having the buckles separately attached, they are connected by being fastened to the ends of a strap sewn along the width of the girth, as is represented in the drawing in the case of the top pair of buckles only. This arrangement gives additional security and strength by indirectly joining the breast band to the posterior one.

The band which passes round the front of the chest to keep the girth in its place, and the horse from getting out of the slings, should be made of thick leather, well padded. It should be about six inches wide and three feet long, and made to fasten by two straps to the buckles on the girth. The band passing round the quarters should also be made of stout leather, well padded, and attached by three straps in the same manner as the breast band—about four feet is the length it will be required, and it should be quite ten inches in width, as the horse sometimes hangs back, and rests a great deal of weight upon it: both this and the breast-band can be regulated according to the size of the horse by the straps and buckles. The straps which pass upwards to keep these bands in position should be fastened by buckles to their upper edges, and it is as well to have them padded where they rest on the withers and sacrum; it is necessary also to have another strap attached by a buckle to the top part of the hip strap, with a ring at its other end to pass over the lower hook of the pulley—this will prevent the latter strap from slipping downwards and backwards. The description here given will be more clearly understood on reference to the woodcut. It is in the pulley apparatus that the greatest improvement has taken place, through which much time and labour have been saved in the process of raising and securing the slings.

In the drawing alluded to, in 'Percivall's Hippopathology,' a double set of pulleys are represented, one being required for each end of the girth, but by the introduction of the cross-bar, which connects these two ends, and keeps them the proper distance apart, one set of pulleys and ropes is sufficient. Latterly, instead of the ordinary pulley blocks and ropes, 'Weston's Patent' pulley apparatus has been employed,

and with great advantage. It is manufactured at Tangye and Company's, Birmingham; is made of iron, and constituted, as will be seen in the engraving, of one continuous chain and two wheels; it has a hook at each end, one to fasten to a staple in a beam, the other to suspend the cross-bar; the upper wheel is the larger, and has two grooves for the passage of the chain, the lower has only one, which is plain. The grooves in the top wheel are so made that, by means of little projections from the side, each link is held separately as the wheel revolves, and cannot slip either backwards or forwards; and in consequence of one of these grooves being of less circumference than the other, it holds a smaller number of links, so that when that part of the chain which passes first over the larger groove is pulled, the lower wheel and hook suspending the slings are raised, by as many links at each revolution of the wheel as the larger groove holds more than the smaller; while by pulling the part which first passes round the smaller groove the apparatus is lowered by a reverse process. By means of this arrangement one person is quite sufficient to draw up the heaviest horse; for when the hold is relaxed between each pull, the chain maintains its position through being held by the projections in the wheel. For the same reason also the chain requires no securing, as it cannot slip; all that is necessary is to loop up the ends out of the way of the animal's legs. With the old method it was necessary to call in the aid of five or six strong men to draw up the animal; and the end of the rope being made fast to some convenient place, it frequently happened that the horse was either lifted uncomfortably high from the ground, or not sufficiently high to derive benefit from the slings. It is usual to confine the head by a double-reined headstall, but in some cases the horse may have his liberty, as the lower hook of the pulley apparatus revolves, and thus the animal's turning does not disarrange the slings.

PARAPLEGIA IN THE HORSE.

By A. Green, M.R.C.V.S., Dudley.

Thinking the following case may be of interest to some of the members of the profession, more particularly the younger ones, I am induced to give an account of it, which, however, from the little I saw of the patient, must necessarily be very brief.

Paraplegia in the horse is often caused by the animal

slipping in frosty weather, and sometimes from carrying a heavy weight to hounds in a severe run; but neither of these causes were in operation in this case.

The subject in question was a bay cart-horse, six years old, which in the act of staling slipped and fell. He tried to recover himself, but was unable to do so.

My attention was called to him on August 8th, at 7.30 p.m., five hours after the accident. I found him lying on his near side, totally unable to rise. The pulse was quick and small, easily giving way under the pressure of the finger. Profuse perspiration covered the flanks, and considerable pain was shown when pressure was applied to the loins, especially on the right side. The hind legs were cold and paralysed to a certain extent; there was also partial loss of sensation, which gradually became worse. I diagnosed the case to be one of injury to the lumbar vertebra.

Treatment.—I had the horse placed upon his chest and well packed up with straw, after which I administered some aperient medicine and threw up clysters. The loins were also well fomented, and then stimulated with mustard and vinegar. Before leaving for the night I had the body well covered with warm rugs.

August 9th, 10 a.m.—Pulse very weak, almost imperceptible at jaw; no evacuations; hind extremities cold, and total loss of sensation. I introduced a catheter, which relieved the bladder of about a pint and a half of urine; but seeing no chance of recovery I ordered him to be destroyed.

Autopsy.—Expecting to find some direct cause of pressure upon the spinal cord, I made a careful examination, but could detect no injury done to the cord or to any of the vertebræ. The psoas magnus, however, of the off side was extensively lacerated, and the surrounding tissues distended with clotted blood. It was self-evident that the paralysis was caused by the torn nerve-fibres and the pressure of the coagulum.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 739.)

Oats.—As oats form so important an article of food to our domestic animals, and the facts of their development and production so well illustrate some of the more important principles of Botany, we purpose to devote this paper to a

consideration of the origin, cultivation, and properties of the crop, cereal, corn, or cultivated oat.

Origin of Crop Oats.—Professor Lindley, in the article "Avena," in Morton's 'Cyclopædia of Agriculture,' suggests that the cultivated oat "is a domesticated variety of some wild species, and may be not improbably referred to Avena strigosa, bristle-pointed oat;" but our experiments would show that the Avena fatua is the form from which at least the domestic sorts in general cultivation seem to have sprung.

The *Avena fatua* (wild oat) is an annual grass which almost universally accompanies agrarian circumstances; that is to say, it seldom, if ever, occurs in a truly wild aboriginal state, and is therefore not found in uncultivated tracts, but is the common attendant on tillage, and in some soils is a most common and disagreeable weed in various agricultural crops, but more especially amid grain, whether of wheat, barley, or oats. Sometimes it is found with beans, peas, and vetches, and indeed it may be said to be a common weed in some districts in any crop from which it has not been eradicated by the hoe—an operation almost impossible in grain, as its growth is so much like that of the crop itself.

It is a tall grass, rivalling the height of the finest cultivated oat crop, from some forms of which, and especially those with a lax panicle, it is at first not easily distinguished; however, a more careful examination and comparison with the so-called Avena sativa (cultivated oat) enables us to make out the following differences:—

Avena fatua, L.	*Avena fatua*, var. *sativa*.
The valves of the inner pales which adhere to the seeds, thick, and covered with stiff hairs, especially towards the base. The external valve has a long, stiff awn, which in the ripe seed is usually twisted at the lower part and bent at nearly right angles at about the middle. The grain very small and worthless.	The valves of the inner pales not so coarse as in *A. fatua*, and quite devoid of hairs. The outer valve with or without an awn, which, when present, is not so stiff as in the wild plant; sometimes twisted at the base, but seldom bent; seeds large and full, forming the grain for which the crop is cultivated.

The experiments about to be detailed were performed with the Avena fatua.

In 1851, a quantity of this plant was noticed by the author on the farm of C. Lawrence, Esq., near Cirencester. It was mixed with a patch of mangel wurzel which had been planted for seed; and from these specimens sufficient seeds were preserved wherewith to sow one of our experimental plots.

It should be noticed that the substratum was forest marble,

and no doubt the seeds of the oat were brought with the manure with which the mangold patch was dressed.

In the spring of 1852 a plot of two and a half yards square was sown with seed which had been kept during the winter, a fact which should be carefully noted, as it forms a first and most important link in the chain of evidences, and constituting what we term a cultivative process, inasmuch as in wild growth the seeds are sown as soon as they become ripe.

The seeds of the first crop came up well, and on ripening, towards autumn, the plants were tall and robust; the grains presented a scarcely appreciable difference from the wild examples; if any, there may have been a slight tendency to an increased plumpness of grain.

The seeds of No. 1 were again collected and preserved throughout the winter and sown in a patch of similar size, but in a different part of the garden in the spring of 1853, repeating the process with the successive crops in 1854 and 1855 with slight alterations from year to year, though in some examples the following tendencies seemed from the first to be gaining strength in some few of the specimens.

1st. A gradual decrease in the quantity of hairs on the pales.

2nd. A more tumid grain in which the pales were less coarse, and the awn not so strong and rigid and less black than in the wild example.

3rd. A gradual increased development of kernel or flour.

The seeds of 1855 crop, without selection, were treated in the same manner during the winter and were sown in the spring of 1856, the resulting crop in August of the same year presenting the following curious circumstances:—

1st. Avena fatua (typical wild oat), with large loose panicles of flowers, thin hairy florets with a bent awn twisted at the base. Five parts of the crop.

2nd. Avena fatua, var. sativa, with loose panicles of flowers, florets quite smooth, tumid with or without straight awns, some few examples slightly hairy towards the base. This is the potato-oat tribe. Six parts of crop.

3rd. Avena fatua, var. sativa; panicles, more compact flowers inclining to one side, grains more tumid than 2nd, quite devoid of hairs, awn straight. These present the type of the white Tartarian oat. Twelve parts of the crop.

Having now procured a crop of separate types of oats from the same seed, we preserved them distinct and this year carried on our experiments by cultivating a patch of each, whilst the plot of 1856 was left with self-sown seeds in order that it should again become wild by degeneracy.

From these experiments, then, we may conclude that the different types of crop-oats are derived from the Avena fatua or wild oat, but besides this they open out a subject for inquiry of great practical interest and importance, which may be clearly stated as follows:—

If by cultivation the wild oat assumes the cultivated form, then by degeneracy cultivated oats may become wild ones. Those who know what a detestable weed is the wild oat wherever it occurs, and how difficult it is to eradicate, will at once see the cogency of the question involved.

Farmers in some districts, and more especially on stiff clay soils, have ever objected to the cultivation of oats, as they had always maintained that they left behind a crop of weed-oats. This, which was never a favorite idea with the botanist, who is generally too much inclined to species making, seems now to have a basis of truth; for not only is it confirmed by the experiments described, but observation of an independent kind points to the same truth.

On examining the produce of shed or accidentally-scattered oat seeds, the first crop will often present the wild tendency in a partial reversion to the hairy state, an elongation and thickening of the awn, and a lessening of the size of the kernel, and this more particularly on heavy soils. It was indeed an observation of this change in oats scattered on forest marble clay which induced us to try the experiments above detailed; and as the subsoil of our botanical garden is the same clay, we were perhaps indebted to this cause for arriving so soon at such signal results.

Again, it is known in farming that some clay land will never produce heavy oats, a sample however good is sure to degenerate upon such soils. Hence, then, the foregoing experiments and observations lead to the following conclusions:—

1st. The wild oat is perhaps not a native of Britain, but derived through the degeneracy of the cereal crop, and hence its occurrence only as an agrarian.

2nd. The cereal oat on the contrary is the result of the impress of cultivative processes upon the wild form, and as such is liable to lapse into the wild state with greater or less celerity, according to the circumstances of the soil and situation.

These conclusions are of practical value, as they show the direction in which experiments should be conducted in order to attain to varieties, it being a well-known fact that one variety is suitable for one soil and another for a different kind of land. And again, as some forms of plants would seem to have the tendency of wearing out by long cultivation, so we

have the means of applying to the original source of their production, and thus of commencing a new generation.

They teach us, too, the necessity of avoiding the growth of the oat crop in some situations, and which in the case before us is not the result of the "pigheadedness" with which the farmer is often so thoughtlessly accused, but a conclusion founded on reason; and if we consider how robust is the growth of the wild oat, and that its support is secured by robbing the grain crop with which it occurs as a weed, the difficulty of separating it from a crop where it has gained a footing, and above all that its succession is secured by its seeds universally ripening a few days before that of the crop with which it is mixed, and the moment they are ripe they fall and become self-sown; we can see abundant reason for wholesome fear as to the introduction of cereal oats in districts liable to their degeneracy.

Under cultivation, which supposes the selection, saving up, and sowing in a prepared bed of our seed, the wild oat seed gradually becomes smooth externally and its awn less coarse, while internally the grain becomes larger and heavier, so that while the seed of the wild oat would weigh about fifteen pounds per bushel, that of the fine sample of white cultivated oat sown on our own farm this year weighed as much as forty-eight pounds per bushel; now the proof of this theory consists in the facts—

1st. That heavy oats degenerate by being cultivated in poor soil.

2nd. By being let go wild they sink still lower, and gradually assume the external hairs, stiff awns, and poor grain of the wild oat.

Cultivation of the Oat Crop.—Inasmuch as in our every day operations on the farm all the circumstances and the results of our different crops are daily tabulated and noted upon, each crop, as it were, becomes the object of a series of experiments; thus as regards oats we should never sow any seed without first ascertaining the weight *per bushel*, and germinating power *per cent.*, of a fair sample. The reasons for the first will be explained presently, and for the second will be readily understood when it is stated that in samples which have come under our notice there have been the enormous differences between *every seed germinating regularly and evenly, and* 95 *per cent. not being capable of germination at all.*

Now, as regards the weight of the seed to be sown: if oats be sown on very good land it sometimes follows that a light seed from a poorer soil will produce a heavier sample, but as

regards our own farm on a soil of light sandy loam we have found that a poor seed has produced a poorer sample. Thus in a field of black oats sown with perfect germinating seed, the weight of which was 40 lb. per bushel, our crop of ten sacks an acre did not exceed 38 lb. the bushel.

The next year we procured some of the heaviest seed in the market, namely, some white Canadian oats of 48 lb. per bushel, and the resulting crop was 12 sacks an acre, with a market sample of 37½ lb. to the bushel.

These simple facts, then, so far seemed to show the advantage of good seed that we have always endeavoured to obtain the best to be got, and though crops will of course vary with the season, yet our observations and register of facts has established the principle that *the heaviest and best seed oats are the cheapest.*

If we look at the common-sense reasons for this they will be found by carefully studying the origin of the oat; the seed of the common wild oat *Avena fatua*, or its congener, *Avena strigosa*, will seldom exceed 14 lb. per bushel, and our experiments in the ennobling of the former has established the position that improvement is marked by the production of a heavier seed.

Another important point in cultivation which experiment has settled in our own mind is, that half the seed usually sown produces better results than double the quantity which is the rule.

In 1869 we could point to two neighbouring fields of oats, each of about ten acres; these were as near alike in soil and cultivation, and other attendant circumstances and conditions as possible, except that in one field as much as five bushels of seed had been sown to the acre, in the other but two bushels to the acre.

Now the results as observed before cutting were about as follows:

The crop seeded with five bushels of seed had a majority of straws the size of a crow-quill, the whole plant being about a yard high, the floral panicles having but few seeds.

Produce estimated at eight sacks an acre.

The crop seeded with two bushels of seed:—

Had a majority of straws the size of a goose-quill. The whole plant was from four to six feet in height; seed panicle large and heavy.

Ascertained produce twelve sacks an acre.

The drought of the past year has resulted in but a poor crop, but still the weight is nearly 45 lb. a bushel.

Uses of the Oat Crop.—In our review of this subject we shall mostly confine our remarks to an illustration of the value of the crop as food for the lower animals.

In an article on oats in Morton's 'Cyclopædia of Agriculture' we read that "the consumption of oats as food for horses is very great throughout the United Kingdom; for although beans occasionally form a certain proportion, and are a most valuable auxiliary, still the main ingredient must consist of oats if the health and taste of your horses be consulted. In Scotland, where oats generally constitute from a fourth to a third of the grain crops on a farm, about one half of the oat-crop is consumed by the farm servants and horses, the other half being sold to corn merchants and millers.

It is estimated that a million and a half of horses are employed in Great Britain, and allowing two bushels a week to each horse the total quantity consumed will be 21,000,000 bushels per annum.

The importance, then, of this crop to the horse-keeper must be manifest to all. It is no less so to the stock-master, for as a food for cattle and sheep oats are of great value; their employment in these cases, however, will most depend upon their relative value when compared with other feeding stuffs.

Now, in estimating the value of oats for feeding purposes it is important that we look to their weight per bushel, for if you take the extreme case of the wild oat at 14 lb. per bushel, how little flour will it produce, while those of 48 lb. per bushel will afford a heavier weight of farina than that of the whole bulk of the former. Now we believe that intermediate cases will give intermediate results.

Professor Voelcker sums up the facts as to composition of oats derived from analysis as follows:

"1. That the quantity of starch in the oat is nearest to that of barley.

"2. That the oat is very rich in oil or fatty matter. The fattening qualities of oats must be very great. With the exception of Indian corn, in which Boussingault found on an average 7 per cent., and Dumas 9 per cent. of oil or fatty matter, none of the other starchy feeding materials contain so much fat.

"3. That the proportion of flesh-forming matters in good oats is larger than in wheat. For the production of muscle, oats, even including the husk, must therefore be considered superior to almost any other corn."

Few among us who have had the care of horses especially but know the value of oats, and we all know that they are

good in feeding qualities in proportion to their plumpness, as a plump, well-formed grain contains no more husk than a long, thin one.

Still, we recollect sending some oats to London for a friend's carriage horses; they weighed close upon 48 lb. per bushel, and were a well-harvested, white Canadian oat. Of course the price charged had some reference to the weight, but our friend informed us that he lost by paying this extra price, as his horses got just the same quantity as they did of an inferior kind. On our asking the groom upon this matter, we were informed that "certainly he gave the quantity master allowed, but the better the quality of his corn the less was he likely to want a job-horse as an occasional aid in extra work or bad weather."

Farmers in buying oats or using them act entirely in accordance with quality, and good oats are usually considered cheapest.

"Do you bruise your oats yet?" is a question not unfrequently asked, and in reference to this subject we would remark that in using oats for horses or sheep we consider that four bushels of bruised oats is almost, if not quite, equal to four bushels of unbruised corn, and hence as bruising increases the bulk about one eighth, this pays for the labour of the process.

Much has been said about the different value of white and black oats. It should be remembered in such discussions that it is after all only the husk that varies in colour, the value of either will depend upon the quantity of farina they may contain.

As regards the growth of oats for farm purposes it is still a moot point whether it is better to cut the crop before it is ripe, dry the whole as hay, and cut the seed, and stem, and leaves up together. Again, is it better to cut ripe oats into chaff without the expense of thrashing? We have tried both plans, but as in the first case, our carters have tried to use the corn crop and hay, and get corn beside, and in the second used the whole just as they would hay or common straw-chaff, we found that a rick was soon gone, and that it was so far economical that it was indeed made a wasteful process, and so we had to stop it. In using the corn we can, as we say in the country, "guide it" by just giving what we deem proper, and the quantity is with us always regulated more or less by the quality.

These remarks, it is hoped, will tend to show those who have the care of our different corn-eating animals, that there is a botanical no less than a chemical view of the subject,

and that the elucidation of the one mainly depends upon the competent comprehension of the other.

EXCISION OF ANTERIOR PORTION OF LOWER JAW OF A YOUNG CALF.

By Alex. E. McGillivray, V.S., Banff, N.B.

On the 7th of June last I was called to a fine pure short-horned calf belonging to a person in this district, which was said to have torn its lower jaw by fixing it on a hook in the wall of the stall. The little animal, which was only seven days old, presented a most pitiable appearance, the upper part of the anterior portion of the lower jaw being one mass of torn flesh; the wound was beginning to fester and smell most abominably. On examining the parts I found that the *rami* of the jaw were torn asunder, the left *ramus* being also fractured—the detached portion being in several pieces. Taking all things into consideration, I decided for an immediate excision of the whole injured mass, but the owner would not hear of such a thing being done. I therefore cleared away all offending matter, several small pieces of bone, washed the parts well with a solution of carbolic acid in linseed oil, and finally made all fast and firm by bringing the lacerated edges together with several sutures of fine silver wire. These means, however, did not succeed, and in three days I had a message to go and do with the poor little sufferer whatever seemed good to me. I lost no time in attending, and at once cut away all the injured parts, including both *rami* of the jawbone, for about two inches, all the teeth, of course, and the whole surrounding soft structures, leaving only the lower lip and external integuments. I then placed some medicated cotton in the cavity between the lip and remaining portion of jaw, saturating it with diluted carbolic acid, and applied a slight amount of pressure with a linen bandage. On calling a few days afterwards I found my patient progressing wonderfully well; only a little extra granulation had taken place, which was checked by the application of a heated iron, the ordinary caustics being to my mind inappropriate in such a case as this. In the course of three weeks, the parts presented a pretty natural appearance, the lip having resumed a normal position and contracted on what remained of the jaw; the calf never having left off taking its milk from the pail. It now eats cut grass or any-

thing else that does not require division by the incisor teeth, of which it is necessarily minus.

ON THE EFFECT OF CERTAIN MEDICINES.

By the Same.

I BELIEVE there is a vast amount of nonsense written (not to say spoken) about the effect of this and that medicine. How often, when following the dogmas of some of our writers or speakers, do we find our prescriptions fail to have the desired or promised effect! For instance, we are told by one, and I must say good authority, that "a drachm of calomel and three drachms of aloes is a full purgative for the horse." Now the fact of the matter in so far as I am concerned is, that we might as well expect to purge any animal above eight hands high with an ounce of chalk as with the above dose. My usual horse-ball consists of one drachm of calomel and eight drachms of aloes, and unless the patient is well prepared for physicking even this dose often fails to prove satisfactorily effectual. In the month of September last year I met with a curious case having reference to the subject under consideration; I was called to attend a half-bred horse which was dead lame from a kick on the near elbow; and considering it as well to administer a purgative, I gave him one drachm of calomel and eight drachms of aloes. After two days, there being no sign of purging, I repeated the dose; and on the fourth day, the bowels being still dormant, I gave the same dose a third time. None of the three doses ever affected the horse in the least; his droppings continuing about the natural consistency! What could I do? Oh, vary your medicine, many will mentally remark; however, I did no such thing, but simply ordered plenty of sloppy diet.

There are two other medicines about the doses of which there is a good deal of uncertainty, namely, aconite and strychnia. I have had some fine cases, or rather cures, from the employment of these agents, and some most lamentable failures. It is now nearly four years ago, when, one very stormy night, I wished to get rid of an old cow by strychnia; well, I gave her thirty grains and expected instant death, but no, the old lady showed none of the usual tetanic symptoms. In desperation I then exhibited sixty grains in solution, and the only effect was a few spasmodic tremors which continued for about twenty minutes, when again the old cow was as lively as ever! The quality of the strychnia was above

suspicion, as, in some experiments previously made with it, the tenth part of a grain caused instant death in mice and sparrows. On the other hand, I once saw a horse that almost collapsed from the effects of the administration of two grains! not of the same strychnia, however, as the old cow got.

I find no good results from aconite in doses as commonly used. I have given a dog a fluid drachm of Fleming's Tincture of Aconite, and secured his jaws so to prevent vomition, without any serious effects. I have had good results from doses of thirty-five minims given to cattle and repeated every second hour—I mean Fleming's tincture—but as regards such doses as ten and fifteen minims I am almost certain they are harmless.

In my opinion practitioners are guided too much by what they have heard or read; that which I would have them guided by is what they have done! When no effect follows a prescribed course, let us alter the prescription, and not go on remorselessly dosing our poor dumb patients in expectation of the desired effect sometimes coming to hand!

[We may safely leave these opinions and statements to the tender mercies of our readers.—Eds.]

MR. W. A. WILSON'S REPLY TO MR. HILL, ON THE USE OF THE ACTUAL CAUTERY.

In last month's number of *The Veterinarian*, I find some comments on the use of the actual cautery, by Mr. Hill, veterinary surgeon, Wolverhampton, wherein he states that "he was rather astonished" at some remarks made by me upon the following operations, which appeared in the number for July last.

Mr. Hill objects to the system, advocated by me, of deep firing in cases of ringbone, ossified cartilage, quittor, farcy, thick leg, &c., in which diseases I stated that I sometimes penetrated to the depth of an inch. Indeed, in cases of quittor and ossified cartilage, I might have added that I frequently exceed this depth.

I repeat that very often, after the superficial or common method of firing in the foregoing diseases, the lameness remains; whereas, if the deep firing had been applied, in most of the cases, in all probability the lameness would, after a lapse of sufficient time, have disappeared, and all that we desired would be thus obtained.

Since my remarks appeared, I have performed the opera-

tion of deep firing in two cases, in one of which (a case of ringbone) I fired to the depth of half an inch. The other was an instance of the existence of a large indurated tumour on the front of the knee-joint, about the size of an ordinary melon, in which I fired to fully the depth of an inch.

I am happy to say that both cases are doing well, and I shall have much pleasure in showing them to Mr. Hill, or any member of the profession.

The next point in which Mr. Hill differs with me is my recommending firing for "lampas," which, he says, "is the most barbarous of all practices; an operation cruel as it is needless; an operation that every member of our profession should look upon as ignominious to his calling."

He further goes on to observe that "lampas" will give way to the use of the lancet, and feeding the animal for a few days on soft food.

Mr. Hill's method of treatment is perfectly in accordance with the scientific treatment taught at our colleges, but I still maintain that the use of the actual cautery is the best; and why?—because after the parts have been properly burned, the animal will resume his natural feeding in much less time than if the lancet had been used. Again, after using the lancet, I have found the disease to return, which I have not seen after the use of the iron.

I therefore contend that the practice which cures in the shortest space of time is the best, and cannot be cruel when it alleviates pain.

It is generally the custom in this town to use the firing-iron for "lampas." The owners of horses do not believe in the lancet, and, if one practitioner refuses to perform the operation to the satisfaction of the owner, another will soon be found to do it.

I would not care for this, and would certainly refuse to operate, did I consider it unnecessary; but I think it more cruel to keep the animal from taking his usual quantity of food, and, consequently, act according to circumstances.

If Mr. Hill will refer to my former remarks, he will find that I am directly and decidedly opposed to unnecessary, and consequently cruel operations.

Mr. Hill also says that firing for "lampas" "is more severe, equally absurd, and infinitely more cruel than the operations of cutting dogs' tails or docking horses."

Now I beg most distinctly to disagree with Mr. Hill *in toto* on these several statements.

I think that the generality of veterinary surgeons who have seen much practice will, in the course of their experience,

have met with one or more cases of "tetanus" arising from amputation of a portion of the tail, commonly called "docking."

I need not enlarge on the fact that in dividing the coccygeal bones you also divide, at the same time, nervous trunks which may be regarded in the light of a continuation of the spinal cord, which operation is sometimes followed by the death of the animal.

I think "docking" is a very painful, cruel, and unnecessary operation; but I do not think these remarks will apply to the operation of firing for "lampas." Further comments are useless, and therefore I will leave to the profession at large to judge for themselves.

"Lampas" is an affection generally found in young horses, and is usually discovered by the animal being "off his feed." On examination we find the gum of the upper jaw inflamed and protruding beyond the level of the incisors.

In performing the operation I do not use an iron with a curve (which is the one in common use), and burn out a portion of the gum, which is usually done, but merely apply a flat piece of iron, at a white heat, to the part until I have reduced it to a level with the teeth. The operation, which, if the animal is properly secured, will not occupy a minute, is then complete, and nothing more is required. Confine the animal for the first day to cold bran mashes, and in an incredible short space of time the horse will assume his natural method of feeding, and be all right again.

I remember a case where the lancet had been used, and the palatine artery divided, thereby bringing discredit on the operator, and causing some little trouble to stop the bleeding.

I presume, and am glad to find, that Mr. Hill agrees with me in the majority of my statements, as the only ones that he finds fault with are deep-firing and using the hot iron for *lampas*. These objections I have endeavoured to answer in as short a space as possible in your valuable Journal.

When I penned my previous remarks, they were intended principally for the perusal of the younger members of the profession, of whom I find Mr. Hill is one. Perhaps, when he has been a few more years in practice, some of his present ideas may, to a certain extent, undergo a change.

Theory is all very well, when it is united with successful practice; but such is not always the case; and then it is not only impolitic, but even sometimes dangerous to carry out.

When I was a pupil at the Royal Veterinary College, I have had to sit hour after hour, and day after day, listening

to lectures that I think might have been curtailed into much less time and space.*

When I obtained my diploma and commenced to practice, I was full of theory, and thought it could not err. But I soon found that, in some instances, I could not carry it out successfully, and was obliged to fall back upon some of the (then) discarded dogmas of our predecessors. Apropos, I will relate one;—during my pupilage at College, firing and blistering were entirely abolished, and other methods introduced in their stead.

I mean no discredit to any of our teachers. It was only their hobby; peace to their *manes*. I never yet knew a brother practitioner who had not a hobby of some sort or other. Perhaps mine is firing. I may be wrong, but I do not think so. Time will show.

In conclusion, I beg to say that I have started the ball, and hope that other members of the profession, who think it worth while to do so, will keep it rolling until the subject is exhausted. We may then, perhaps, be enabled to arrive at something like a just and satisfactory conclusion on the merits, or demerits, of the use of the actual cautery in veterinary surgery.

[* Mr. Wilson, in making these observations, alludes to a period long since passed. We find that Mr. Wilson obtained his diploma thirty-two years since, and until now we had not heard that too much of the pupil's time was then occupied in attending lectures and lengthy expositions of science. —Eds.]

ARMY FARRIERS AND SHOEING SMITHS.

By "Hippogriff," Royal Horse Artillery, India.

Our *confrères* in civil life will probably find little to attract their attention in this paper, but the military veterinary surgeon will recognise the subject as one having reference to a source of annoyance which, at a very early period of his service, he discovers to be imposed upon him. *He* may, therefore, not care to dwell long upon so unpleasant a matter.

Our farriers and shoeing smiths are not much understood outside the army, but they are men acknowledged by Government to belong to a *special branch*, classed under the head of artificers, and supposed to possess a smattering of science, by which they are expected to render assistance to the veterinary surgeon in the execution of his duties, or, in the absence of that officer, to administer to the relief of sick and lame horses; their other duties being to make, fit and apply horseshoes.

In consequence of the training of a faulty system they do not reach the standard that a veterinary surgeon is led to expect, nor do they attain to that which Government demands.

The present system has no pretentions to *speciality*. Its principles are as unsound as they are indefinite, and possess the disadvantage of placing the farrier and shoeing smith in anomalous positions. More is demanded of them than they can possibly render, and even those things which they do render in the pharmacy and infirmary are almost without an object, certainly without method; and by reason of an insufficient education, and an ill adaptation to learn, army farriers often prove, directly or indirectly, detrimental to the property of the State, and more or less seriously affect the duties of the veterinary surgeon, if by any chance too much should be conceded to them.

In this particular branch there is an extensive field for emendation and improvement, towards which, however, some attention has of late been directed, with what result we are not acquainted; but at the present time there is so little regard paid to the selection of men (and their subsequent training) to fill these important posts that we often wonder how we manage to meet the requirements of the service.

In thus noticing a subject, which might be discussed with more propriety within the limits of its own sphere, we are simply representing, in a more tangible form than heretofore, its lamentable conditions.

They are well known to each, yet have escaped the due consideration of army veterinary surgeons collectively. Opportunities for the adoption of such a course do not offer themselves to us, especially in India. We are too districated to act as a body, nevertheless a general effort is demanded to give an impetus to a force which should, eventually, exercise some influence in rectifying the principles that regulate the constitution of farriers and shoeing smiths.

To these points the earnest attention of veterinary medical officers is directed, in the hope that each will add his quota towards the improvement of those who come under his immediate surveillance; for upon them he has to rely, to some extent, for assistance in operations, as well as in the care and treatment of his patients. Who has not essayed, some time or other, to strengthen the weaknesses of the system referred to, and how often has he failed? Who has not noticed the recession of that support, which is essential to success, at a critical period? Who has not known phantom-like difficulties crop up in the usual quarters, or who has not encountered opposition, prejudiced and imaginative as its opinions may have been?

Experience advises us to be content with little achievements or with none at all; to bear with deferential grace and silent fortitude the perplexities that have always been attached to this subject, and to allow our thwarted energies to return to the confined track of duty, beyond which, even for good, it is not politic to step.

To ensure assistance in carrying out the duties of the army veterinary surgeon it is requisite to teach some one to act in a subordinate degree. The recipients of his instructions are *acting shoeing smiths, shoeing smiths and farriers,* or, rather, these are the men at whom instruction is directed, and upon whom it is, to a great extent, lost. Their education, as a rule, is of the meanest order, and their susceptibility to imbibe mentally is not in excess. Prejudices prevent the right exercise of their understandings in many cases; stubborn and headstrong dispositions have to be dealt with in others; whilst that temperament, wherein *brute force* is a predominating quality, may be considered to be more or less inherent in all.

We will first glance at the "acting shoeing-smiths."

Our experience points to many who have been selected from the ranks and placed in the forge, perhaps on account of their incompetency in positions where more ability was required, and perhaps not. Some had been tradesmen previous to enlisting, whilst others had never known the trade of *smith,* shoeing, or otherwise, until they entered the forge of a battery or regiment. In the shoeing forges of the army it is not usual to find intelligence and ability on intimate terms with each other, they seldom go hand in hand; neither is it customary to see the majority of smiths doing credit to the art they are striving to learn.

No one doubts but that a man's physical powers should be well developed to fit him for the duties of acting shoeing smith, but why their consideration should preclude the just observance of his mental capacity we have not been able to discover. At the time of his selection it is not considered that he will be called upon to think, to exercise his own faculties, to carry out the ideas of his instructors, or that his mind should be a shade more comprehensive than that required to stand to him in the forge and shoeing shed. Qualifications of this type are overlooked, and the result is that many a one occupies a post the duties of which he is unable to discharge. A request for the removal of such is met by "Men cannot be spared or found for substitution;" or it is thought "no improvement could be made." Instances have been known where improvement might have been made, but hard work and no pay are not baits to tempt intelligent men

to adopt a new line, especially of the character of our subject; they look in other directions for promotion. Some may be glad to seize the chance of becoming an acting shoeing smith, to escape the jading routine of parade; others attend the duties of both, one of which must be neglected, though it is not likely to be the parade. From this class much must not be expected. He is not the proper age to begin to learn an art of which he is altogether or partially ignorant; his frame, though muscular enough, may be too set and fixed to yield readily to sudden change, and the powers of his mind will not be sufficiently ductile ever to assume a promising form. In more respects than one the acting shoeing smith's position is nominal.

If he completes the shoeing establishment and is shown in the monthly return of qualifications, well and good—how satisfactory! though his abilities have never, perhaps, been commented on by the veterinary surgeon. That the abilities or qualifications of these men are seldom reported on monthly by us is true; that they should be reported on monthly is also true. When a vacancy occurs in the forge as a result of promotion, sickness (a frequent cause of short-handedness in India), or return to duty, one who possesses the above or corresponding qualifications is selected to enter a novel line of occupation or to re-enter a half-forgotten one, that is, to discharge the duties of the forge, but not to become conversant with those of a veterinary medical nature.

If not able at once, he will, by and by, learn to strike, remove an old shoe, file up a new one and point a nail, simply operations at which he will remain for a long time, evincing no particular desire to progress. Unless carefully watched he will not be at all conservative in his treatment of horse's feet—soles and frogs will be tastefully mutilated. None but veterinary surgeons know how difficult it is to prevent a practice so reprehensible, even amongst men of long experience, because countenance is given to what ought to be, by this time, the obsolete method of paring and rasping, by a majority that would not care to have its opinions questioned on matters that refer to the management of the feet of its valuable chargers and other horses.

Though a General Order enforces that the soles and frogs of troop horses' feet are to remain untouched, excepting special cases for which the veterinary surgeon is alone responsible, though the owners of high-priced horses cannot fail to see the benefit derived from the system—that is, if they pay any attention to their troopers' feet, and understand them—still they allow their private horses' hoofs to be

periodically pared and thinned with the drawing knife, and, in this way, not only consult and pamper their own whims and fancies, but are somewhat instrumental, by this example, in causing the farrier to foster *his* prejudices, and to look with a degree of incredulity on what he calls an innovation in the art. After crediting the acting shoeing smith with a knowledge of some of his minor duties, detailed above, we have often observed an inability to anything but a tardy advance; he cannot get on; all the advice summoned to encourage him falls as far short of its purpose as does instruction, no matter how often or how practically offered; here he will remain month after month, and, it may be, year after year, without being in the slightest actuated by motives of emulation. Examinations at even long intervals furnish unsatisfactory results. Many curious specimens of horse-shoes have we seen turned by men in this grade, of four, five, and six years' experience, and many, very many shoes have we caused to be doubled up, for re-turning, from the hammers of each grade, including that of farriers.

An acting shoeing smith represents the apprentice of civil life to the art of making, fitting and applying shoes, excepting that *there may be a difference of from six to eight, or perhaps ten years in their respective ages, at the time when they commence to learn.* They who have served apprenticeships previous to enlisting, who have been taught from an early and tractable age, are, as a rule, the best workmen, for with them has grown the art which is so very difficult to acquire after maturity and surrounding circumstances have framed the body and mind.

A tradesman invariably finds his way above his contemporary of army origin, because his early training has rendered him much more handy in the forge, and perhaps affords him a better opportunity for giving his attention to other matters; this latter part of the advantage we cannot say is worthy of much dependence, it may be more imaginative than real.

The art of shoeing, &c., obeys precisely the same laws as do other arts, requiring early and continuous training and zealous practice under competent teachers. In combination with this subject we would recommend the perusal of Mr. Fleming's remarks at the 12th and 13th pages of the *Veterinarian* for January, 1870, or the whole of his observations on the Horse's Foot and his "Horse-shoes and Horse-shoeing."

Against all that we have said, some exceptions must be admitted, which, however, need not be produced. The system, *per se,* has nothing to recommend it, but possesses almost

everything to condemn it. Bearing in mind that we have discussed the probable original of one or both of the next grades, and having seen that he is frequently unfitted for the demands of the forge, let us consider what he becomes on appointment to 'Shoeing Smith,' for he, some time or other, manages to get promoted, though he may not have been recommended by us. That he does become promoted is proved by finding the same specimen in a higher degree. We could not pretend to say from what source of recommendation such promotions result, but we may be allowed to suggest that every monthly return of the (conduct and) qualifications of artificers might be commented upon advantageously by veterinary surgeons, so far as the farriers and shoeing smiths are concerned, which procedure would afford a better clue for others to judge of the abilities of these men.

A pretty clear notion may be formed as to what the foregoing stamp of man will turn out in his new appointment. He now receives extra pay, and wears a badge he does not deserve, whilst, encouraged by recent good fortune, he looks to the possibility, if not probability, of wearing the distinguishing stripes and badge of the third grade. Paucity of farriers and shoeing smiths may warrant promotion, but how far that of incompetent persons is justifiable one instance, of many, will show. A farrier-sergeant was reduced to the ranks on account of habitual drunkenness (which saved him from a similar disaster on the grounds of ignorance and utter inability to discharge his duties), and his responsible position fell to a shoeing smith, who was unable to turn a shoe fit for application; in the pharmacy and infirmary neither one nor the other could be trusted. The latter man was often sick, the former often bordering on *delirium tremens*.

When this low state of qualification was brought to notice, the newly installed man was sent to the forge of another branch of the corps for improvement; his duties, meanwhile, reverting to the reduced farrier, who had, by this time, been placed in the forge as acting shoeing smith. After a lapse of three months, the shoeing smith returned to his charge, somewhat improved by the change; a few months later he was promoted to farrier, much to our astonishment. As to his fitness the above remarks will testify. The veterinary surgeon's opinion was not officially asked, but, to a private question, the man was reported unfit for the appointment—nevertheless, this was not acted upon. We can only regret that the recommendation which gave him promotion had not been better considered. Fortunately for us, perhaps for him, he was removed to another charge.

Constant observation warrants us in saying that, under the present system, many shoeing smiths cannot push their abilities past a certain point, but, if they will be patient, time and conduct will effect for them what conduct and qualifications (abilities) effect for others. Our idea of the standard for these men to attain to will call for a better primary education, followed by a *special course* of instruction and systematic training, outside either battery or regiment, commenced in youth, when the candidate is more susceptible to impressions, and when he would be more likely to profit by the rudimentary principles imparted by his instructors, who should be specially appointed.

Mature age, when suddenly taxed, is always opposed to the easy acquirement of knowledge, no matter from what source it may come, what its chief characteristics are, or to what class of men, as beginners, it may be directed. We may further observe that, if special ends are to be obtained, means more than ordinary in their nature must be resorted to.

When a shoeing-smith is eligible for promotion, he should be in possession of a certain amount of that knowledge which ought to belong to the rank of farrier; the rule, however, has a contrary tendency, and presents him incompetent in a veterinary medical point of view. Ordinary means, in this instance, have not wrought a special end, neither have they even tended to prepare him for the responsibilities of the next grade.

In July, 1869, a shoeing smith *was recommended* for promotion; in November of the same year he *was not recommended*, as he was "not sufficiently experienced;" in April, 1870, and since then up to the present time, he has been recommended. Now, were we consulted, he would not be considered fit for a higher appointment. Surely this paragraph will bear commenting upon.

Another shoeing smith has been recommended for two and a half years, and was in 1868 "quite qualified in every respect for promotion." *We* should feel some compunction in saying so, though we respect the recommendation. He has been officiating as farrier for six months of the time, and is, even now, decidedly unfit for what he was supposed to be in the early part of 1868. The above facts will tend to show the absurdity of the present system; they may, too, supply us with certain suggestions conducive to improvement.

In most parts of India laborious work is conducted in the mornings and evenings, and it is only at these times that a shoeing smith can work with any degree of comfort; and so much of his time is demanded in the forge, that to give any

more than a casual look at the hospital, which is generally on a Sunday morning, before or after church parade, is as much as he is able to do. He, with the farrier and others, must shoe the troophorses and chargers, but as the farrier has to divide his attention between the pharmacy, infirmary, stables, and forge, it will be seen that so much more of the forge duties are likely to devolve on the shoeing smith. Farriers, too, are generally allowed to shoe the horses of private individuals, or outsiders, which, as a perquisite, we do not object to, but, having seen that the practice throws extra work on all concerned, and that it has been carried on to the exclusion of other duties of a similar nature, we are sure that it detracts attention from duties of a veterinary nature. We have often heard, "Can I go, sir? there's an officer's charger waiting to be shod." It may have been an officer's, but not one of the regiment. In the middle of an operation it is not uncommon to hear, "We shall get no beer this morning," and unless permission is given for this indulgence, much uneasiness is expressed. There are few who do not prefer their allowance of beer to seeing an operation. Were it not that every battery and regiment has its own salootrie, or native attendant, in the infirmary, the veterinary surgeon would be obliged to make up his own prescriptions and administer them. As it is we often do this. In many cases the salootrie is far more intelligent, observant, even trustworthy, and useful than the farrier, and it has often been advisable to give instructions direct to the former, so as to lessen the probability of any misrepresentation by the latter. Arrangements that have been made for the regular attendance of acting shoeing smiths, &c., at the horse infirmary, have quickly fallen through, and instructions offered on every available occasion have been neglected or forgotten altogether.

In this direction few show zeal, because, having little or no responsibility, they do not see the necessity for thinking and care not to retain what is taught. Thus *they* go on, and not only expect promotion, but get it.

Men who were shoeing smiths, or smiths of any description in civil life, should, if they can read and write, have better opportunities than those of army origin to acquire knowledge that would make them useful to the veterinary surgeon and valuable to Government in that officer's absence, but they are not selected with a view to their ever becoming apothecaries and attendants on sick horses. Our experience proves that selection and promotion follow similar rules at home as in India. A farrier-sergeant, coming direct from England,

was a disgrace to his own rank, as well as to the recommendation that gave him the appointment, and he still continues so.

We shall now have something to say respecting the farrier, who has, of course, risen out of the former grades, and by them been moulded. Immediately on promotion he finds himself involved in responsibility of great import.

"By his steady conduct he is to set an example to the smiths under his charge," and to supervise their training. In degree, "he is answerable for the perfect shoeing of every horse, and will himself superintend the paring (general management) of the feet."

He is responsible in the pharmacy in compounding, in the hospital, in administering medicines, as well as in the care and treatment of sick and lame horses. His responsibility is, as may be supposed, limited, and does not, in any way, lessen that of others, including the veterinary surgeon. How far this is allowed will be seen by reference to the Standing Orders of the Royal Horse Artillery, section XIV, paragraphs 7 and 8, dated 1861 :

"He is to order all medicines (unless under a veterinary surgeon) subject to the approbation of the officer commanding the division, without whose knowledge no medicines are to be administered, except in cases of immediate necessity."

"He is to see all medicines prepared and given, *and to superintend all operations if he does not perform them himself*."*

Section XV says, "Shoeing smiths are to pay the strictest attention to the directions from the farriers relating to the method of shoeing and administering medicines ordered by him, or in performing any operation."

Much is presupposed in these paragraphs and much expected. We respectfully refrain from commenting directly on the above instructions; and only ask, to what extent can they be complied with?

It is not until the farrier has assumed charge of his new post that he becomes impressed with the importance and complexity of its duties, a clear conception of which his previous training had not afforded ; yet with all this he often meets the difficulty with a wonderful amount of confidence, and soon believes himself an authority on any matter that may be submitted for his consideration; seldom lost for an answer, he is generally decisive, and will assert himself most incontrovertibly.

* The italics are our own.

To divest him of his prejudices and crooked notions is indeed a difficult task, but must be accomplished before he can be deemed trustworthy in the mildest acceptation of the term.

An authority of nearly forty years' experience writes us: "My experience of farriers in the service is that it is impossible to teach them the rudiments of professional knowledge; their education has been slight, and we get them at an age when they are no longer teachable."

A circular memo (No. 44, Head Quarters, Sirula, 14th July, 1870) in the first and second paragraphs runs thus: "It having been brought to notice that in some cavalry regiments and batteries of artillery the farriers and shoeing smiths are scarcely up to their work, while in others they know so little of their trade, that the shoeing has to be conducted by *Nalbunds*,* attention is called to this low state of qualification where it exists.

"Veterinary surgeons are enjoined to take every measure in their power to remedy this defect, and to see that the farriers and shoeing smiths, and the acting shoeing smiths, are carefully instructed in this most essential particular, and commanding officers are requested to be good enough to encourage such instruction."

This is certainly a most deplorable state of affairs, nevertheless, very true; a grave acknowledgment for the latter part of the ninteenth century. The memo is a contraction of the remarks we penned twelve months ago, and confirmative of them.

We append a few observations respecting some of the farriers who have been under our charge.

Farrier No. 1 gives entire satisfaction in the forge and shoeing shed, but is disposed to exercise his own fancy in our absence; he has now afair idea of the management of horse's feet in health, though he cannot quite understand why the soles and frogs of the troop horses feet should be entrusted to the wear and tear of the objects they naturally come in contact with, whilst those of chargers, hunters, &c., require the free employment of the drawing knife, saying nothing of the rasp to the outside of the crust, at least once a month.

Long experience and ordinary observation have *compelled* him to recognise, in a limited sense, the symptoms and evidences of common disease and lamenesses, and to understand their treatment a little. And though he is addicted to

* Nalbund means, native shoeing smith or farrier.

exaggeration, is incorrigibly presumptive and almost unable to read or write, he is an useful assistant under direction in administerial medicines and in operations.

In compounding he is naturally careless, both in the preparation of the ingredients of a prescription, as well as in their subsequent admixture. His contractions and corruptions of the names of mediums are curious enough.

Farrier No. 2 (like No. 1, a tradesman before enlisting) was promoted to the rank in 1868, or at the end of 1867. Two or three months after taking up his appointment he marched with his battery (no veterinary surgeon was available to take medical charge of the horses), and although he candidly confessed his ignorance of everything concerning the pharmacy and infirmary, he was expected, as a matter of course, to comply with 7 and 8 paragraphs of Section XIV previously quoted. Two days after the battery left a veterinary surgeon was ordered to overtake it. The farrier was much delighted, and afterwards observed, "I don't know, sir, what I should have done by myself, for I knew nothing, not even what a physic-ball meant."

His position was a very anomalous one, very false, and particularly unpleasant where every one was expected to know his duty thoroughly, and to do it accordingly. On joining, he imagined the horses stood and travelled too much on their toes, or *vice versâ* (I forget which now), so he proceeded to remedy the defect by thickening the heels or the toes of the shoes, as the case might have been. He was soon taught to shoe according to regulation, or to any modification we desired, and is now a quick and good workman; but this extraordinary idea had been too tenderly nurtured to be given up at once without a murmur. Could he have been taught thuswise the eight years he had served as a shoeing smith?

It is even now (when these notes were penned), difficult to overthrow some of his prejudices respecting horses' feet, but having none to bias him in the hospital and pharmacy, he is much more tractable than No. 1; and as his education is better there is a tendency to pick up information from every available source, and to seek assistance by inquiry into that which he does not understand. Eventually he ought to be a reliable and useful assistant; but how much more valuable would he have been had his education and training been consistent with the duties that are required of him.

Farrier No. 3 (tradesman before enlisting) may be a shade superior to No. 2. He has been in this grade for nearly fifteen years, and on this account fancies himself amazingly. His long experience, however, will not supply that which

primary education and proper training would have effected in his early days.

Farrier No. 4 (tradesman before enlisting) served under us many months as shoeing smith, and, like others, had received instruction when opportunity offered, was a fair workman, but very illiterate, and altogether ignorant of any veterinary duty. He was promoted from our charge, though we had not recommended him. We are on the eve of meeting this one again.

Farrier No. 5 has before been alluded to in connection with the reduced one.

Farrier No. 6 (tradesman previous to enlisting), perhaps the best specimen we are acquainted with, was appointed in 1868. He is not quite so expert in the shoeing department as his rank would be suggestive of; in this respect he will improve. His ideas of disease and its treatment, of medicines and their uses, actions, &c., are more definite than those of the rest. He understands a plain prescription, and is able to compound it roughly, and shows an aptitude in operations. He will even tell you the action of some medicines and their doses, yet will only recognise them by their Latin abbreviations, which are certain to be again abbreviated, if not corrupted.

Farriers Nos. 7, 8, 9, 10, and 11, and many others, are unfit for the next lower grade. To trust them in the pharmacy and hospital would be a sad concession of the veterinary surgeon's duty, yet, in his absence, absurd as it appears, they would be authorised to act. Prescriptions in plain English are not understood; weights and measures unknown; the common names of the most ordinarily used medicines are not recognised; compounding is a perplexity at least impossible, and administration difficult. Their notions of diseases and lamenesses are curiously vague, whilst their method of procedure in the sick-box at once shows that they do not look upon our patients as deserving of or requiring careful nursing. In all farriers, perhaps without exception, there is an absence of method in conducting their duties when they extend beyond the forge, in some of confidence, though not of presumption, in managing anything they undertake. Few possess education enough to enable them to comprehend the simplest forms or phases of diseases or their treatment, and it cannot be so expected until a proper institution is founded for their instruction.

The Medical Department has its 'Subordinate Medical Department,' educated and trained from youth, made up of a class of men upon whom reliance can be placed. Why

may not the Veterinary Department have its 'Veterinary Medical Subordinate Department' embodied in the men we term farriers, or, what would be a vast improvement, constituted of men entirely distinct from those of the forge? In Woolwich Horse Infirmary the necessity for a man who understands compounding is recognised. He compounds all the medicines presented by the numerous veterinary surgeons stationed there, but may have little or nothing to do with administering or applying medicines; this used to be done by the farriers in the most uncouth manner possible. We would confine the duties of the farriers to the forge, to the shoeing of horses' feet in health, and to the stables; they should, in our opinion, have nothing to do with disease, except to report its appearance, and nothing whatever to do with medicine or its administration. They or their duties, however, would not lapse from the supervision of the veterinary surgeon.

All duties of a veterinary medical nature, *inclusive of the ability to remove or apply a shoe, to pare and examine a foot and to dress it,* would fall to the duties of the subordinate. (We cannot, nor would we wish to, escape from the duties of the forge; they cannot be separated from the rest, and even if they could be effectually severed, they are too interesting to us and to most to give up.) But he would have nothing to do with the shoeing in general. He would have similar duties to perform as the medical subordinate, and would take rank accordingly, or otherwise as might be arranged. Every battery of artillery, and every squadron, or, at least, every wing of cavalry should possess a 'Veterinary Medical Subordinate.' Why, may be asked, is our department unworthy of the same advantage as that enjoyed by the medical department? The question is a natural one, and worth consideration. Government is by no means indifferent to the well-being of its valuable horses, or to the necessity of maintaining them in a state of efficiency, but it may think twice over the necessary pecuniary increase there would be incurred in carrying out such an idea. We are sure, however, that the proper representation of these suggestions or their modification would solicit the careful attention of Government, and be rewarded with some success. Our suggestions have been very sketchy and condensed, as we intended they should be in this communication, and to some we have referred we do not claim originality.

Respecting the rank of farrier-major or his duties, we shall not take notice, as his services can, without any difficulty, be dispensed with.

As promotion is simply the result of recommendation, with or without the approval of the veterinary surgeon, so it follows that fitness for promotion is only a matter of opinion. Each has his own standard and acts upon it; thus there are many standards and a corresponding number of opinions, with their respective differences. If veterinary surgeons think seriously of what the standard for the farrier and shoeing smith to attain to should be, the conclusion arrived at ought not to display any significant discrepancy.

But mark! Four or five veterinary surgeons were requested each to write his impressions as to what constituted these three grades; they did so independently; to what extent they varied we do not remember, however, the discussion which ensued proved the whole question to be remarkably unsatisfactory and undefinable, though there was no lack of experience and service bearing on the matter. And at the present time we are, as we were then, unable to determine what constitutes the farrier and the shoeing smith. We may appear to have represented our subject in its most objectionable form; nevertheless, our short experience has furnished the foregoing remarks, which apply more especially to the Royal Regiment of Artillery, where changes are constantly occurring in the distribution of the men who make up the shoeing establishment, to transfer from battery to battery, and sometimes from one brigade to another. Such being the case, it will be seen how very essential it is to lay down some regular standard of knowledge to be reached by each grade, in all branches of its duty, preparatory to promotion, and, as we have several times hinted, to provide some means whereby such a standard could be arrived at and maintained. If this is not accomplished we must ever deal and be hampered with untrained and unteachable hands.

The cavalry veterinary surgeon does not experience so many changes in his regiment; therefore he is better able to frame the working of his department to his own mind, simply because his men are more constant in their positions, and less liable to transfer, and not because they are smarter and more intelligent than the rest—not at all.

The artillery veterinary surgeon may have charge of ten or twelve batteries of two, three, or four brigades, in the course of three years, or less (in ordinary times, we mean), and has, therefore, to deal with much variety which is neither satisfactory nor charming. He sees the working of the system in all its phases, and soon discovers its disadvantages. If the annual relief troops does not remove him it

removes his men—a two years' acquaintanceship being about the maximum—and after *he* has made a series of initiations by way of instruction, *another*, of a different opinion, makes a second series, and so on, neither having any real termination to their beginnings, or any chance of success. The cavalry veterinary surgeon has a fair opportunity of typeing his establishment to his mind; but the artillery veterinary surgeon is compelled to type his mind to his establishment, as well as to a few other little matters.

In order to enhance the usefulness of the present class of farriers and shoeing smiths until some scheme can be completed and sanctioned for their proper instruction, we have ventured to submit a suggestion for the favorable consideration of the Right Honorable the Commander-in-Chief in India, through the principal veterinary surgeon (whose approval, we doubt not, will be given), to the following effect:

That the veterinary department of every battery of artillery and every wing of cavalry be furnished with at least two copies of the 'Veterinary Aide Memoire,' by Colonel W. H. Ryves, Commandant of the 8th Bengal Cavalry, for the use and instruction of farriers and shoeing smiths in India. The veterinary surgeon to be held responsible for these books in the same way as he is responsible for other property of Government.

We regret being unable to recommend any work by a veterinary surgeon; but having heard of nothing but a MS. some three years ago, we make the best suggestion we can.

The work, which is in its second edition, does not presume to offer information to the profession it treats of, neither does it boast of an extraordinary amount of originality. It may be called an abridged or epitomised arrangement of the productions of various authors, in terms calculated to be understood by non-professional men, interspersed with the results of the author's experience, after a long residence in India, chiefly amongst horses of native cavalry regiments.

The works quoted from are those of Youatt, Percival, Morton, Spooner, Stonehenge, Mayhew, Brown, Haycock, 'British Pharmacopœia,' and a few others. This compilation, which has 173 pages (is interleaved for the amateur's notes), was "submitted to the criticism of a high professional authority, who, although differing from me in some points, has expressed himself very favorably regarding the publication with reference to its intended object, and raised no particular objection to any part of it."

It also acknowledges many valuable hints from Mr. Harford, the principal veterinary surgeon. Commencing with "a table of medicines, arranged according to their properties, from 'Morton's Manual of Pharmacy,' and "a table of medicines, with their actions and doses," it gives "an alphabetically arranged list of medicines in ordinary use, with recipes for their continuation, and the forms in which they are prescribed" under their several headings, and the diseases for which they are used in broad margins. Next, "A list of medicines and spices, &c., procurable in most bazaars, with Hindostani names," is given, and concludes with a kind of epitome of diseases incidental to horses in India and their treatment. The shoeing of horses is touched upon, and references made to Miles, Youatt, and Spooner; and though we do not agree with some of his remarks, we think the author has done a wise thing to quote the General Order No. 207, dated Simla, 19th July, 1869, and to recommend the system laid down for general adoption.

The '*Veterinary Aide Memoire,*' as the above sketch will show, is only intended for India, being local in its character, though it is worthy of the study of those for whose benefit it was written; it is, as far as we know, the one best adapted to the limited understandings of the farriers and shoeing smiths in this country, its style and language being easy, and technicalities, as a rule, avoided. Therefore, in the absence of a more suitable work by veterinary authority, we have recommended this to act as a mild substitute for the teachings of a proper institution, to benefit the men we have been considering, who are unable or disinclined to purchase for themselves.

TUITION IN OUR VETERINARY SCHOOLS.

By a STUDENT, Royal Veterinary College, London.

A PAPER headed as above appears in the past month's issue of the *Veterinarian*, hence my apology for offering a few observations in reply, feeling, as I do, that the writer is materially in error on many of the points on which he makes such strong complaint.

My number having only reached me on the last day that communications can be received for the next issue of the journal, I am prevented from so well ventilating the subject as it ought to be; but, nevertheless, I will make a hurried review of the

paper, which I hope will be taken in as liberal a spirit as was asked for the original paper. Firstly, I must acknowledge that I am acquainted only with the working of the London College, and to which I take it that Mr. Fearnley's remarks apply, as his paper is published in the journal conducted by gentlemen principally connected with that school. The writer states that when he was a student he *sat dumb for four or five hours a day*. I don't deny it; but he should speak of the present, not the past. He will find that the time occupied in the delivery of lectures at the Royal Veterinary College never arrives at the minimum limit he states, as not more than three and a half hours are so occupied on one day. As a rule, sixteen hours per week are thus occupied, which is an average of considerably less than three hours per day. Again, during. the time I have been at College I have never once seen a teacher *read written matter* to the pupils; and while admitting that some portions of a lecture are necessarily referred to other sources, so as to render the subject complete, we must allow that men who have spent their whole lives in the acquirement of their profession have unquestionably adduced new facts. I deny that *such sources are accessible to the students*, as it is impossible for them to have equal opportunities with those of the professors.

I consider that whatever a student reads, never can it be so indelibly impressed in his memory as when well conveyed and demonstrated by a practised teacher. Further, we cannot obtain *everything they can tell us printed legibly and intelligibly in our text-books*.

I quite agree with the writer that every man should be practically educated, and I likewise coincide with his other remarks upon this point; but I cannot reconcile to my mind the statement that *lecturers acknowledge that it is a farce they are actors in*, &c., indeed I have heard lecturers of great experience state that it is the best way of teaching, especially when combined with periodical examinations, to test the progress of the pupil.

The writer acknowledges that lectures on anatomy and chemistry are demonstrated, and those on pathology, aided by morbid specimens and clinical instruction; nevertheless he speaks of knowledge as being of little use to medical men unless it renders them capable of performing certain duties, as though it were otherwise perfectly useless, yet shortly afterwards he affirms that students should have more time to spend in the sick-box and dissecting-room.

It would certainly be better if the teacher could be with the pupils in these places; but it is an impossibility to get,

say 160 learners (and I believe there is quite this number at present studying at the College) around a living horse or dead subject without they are arranged in the theatre, and the information conveyed in the form of a lecture.

I coincide with the writer that too much study is an error. Regarding two winter sessions being assigned to learn chemistry, I think that every veterinary student will find the time little enough with his other studies. I understand that the members of the higher branch of medicine only pass portions of their examination at one time, so they can thus give their whole energy to certain subjects; but I am open to correction on this point.

A summer months' session might work well, but both teachers and pupils require some relaxation from their studies, even if only indulged in from 7.30 a.m. to 11 p.m.

I have not penned this with any animus against Mr. Fearnley, as I am not acquainted with that gentleman, but have endeavoured to correct misstated facts.

I enclose my card, and you may publish my name if you think it desirable.

MR. FEARNLEY'S "TUITION."

By "CONSERVATIVE."

As a fellow student of Mr. Fearnley's—one who matriculated and graduated at the same time, and one who would therefore be exposed to the same damaging and professionally fatal system of "lecturing to death," which according to his letter then as now exists—I ask to be allowed space in your journal to repudiate the slur which he has (perhaps unwittingly) cast upon the then teachers of the Edinburgh Veterinary College, three of whom, to the unspeakable loss of the profession, have now passed "that bourne whence no traveller returns."

I will not dwell upon the presumption (I can call it by no other name) of so young a member of the profession attempting to lecture the lecturers on the system of teaching they ought to pursue, or rather ought not to pursue. I make no doubt, however, that should Mr. Fearnley prevail upon the governing bodies of our schools to dispense with the delivery of lectures without necessarily dispensing with the teachers' services altogether, they, the teachers, would feel deeply indebted to him for relieving them of by far the greatest and most difficult portion of their onerous duties.

Mr. Fearnley says, "I will not dwell upon the ridiculous spectacle of a man, learned in the subject he himself teaches, coming before his class and reading written matter which he has himself copied from sources accessible to his students, and which matter will have to be carefully read, perhaps, over and over again by these students before it is impressed on their memories? or, it may be, gives extempore what he knows of the subject. Let him know his subject never so well, and his mode of communicating his knowledge be faultless, he is wasting his time and the time of his hearers when they have everything he can tell them printed legibly and intelligibly in their text-books."

Now, as Mr. Fearnley studied and graduated at the Edinburgh Veterinary College, is it not reasonable to infer that his bitter experience of "the foolish time-and-patience wasting custom of profuse lecturing" was gained there, and there alone? and that "a man" typifies one or more of the four professors who occupied the several chairs at that time, viz. Professors Dick and Strangeways, Drs. Dalzell and Young, regarding either of whom to impute the qualifications of "a man" is, on his part, as unfeeling as it is untrue. And untrue, as typical of either of these, his description undoubtedly is, as I defy him to name the authors from whose works Dick's practical pathology, Strangeway's elaborate and accurate anatomy, Dalzell's fluent chemistry, or Young's concise and pointed physiology—was copied. Does Mr. Fearnley really mean to aver that the time he spent in listening to lectures on such subjects was wasted, and that he derived from them nothing besides that which was "legibly and intelligibly printed in his text-books?" I think he cannot mean what he has said, else why did he voluntarily compel himself to "sit dumb" (undoubtedly a severe test on the patience of one so loquacious) for several extra hours every week, by attending the majority, if not all the private lectures, for be it remembered, attendance on these was not compulsory but optional. He says, "he does not wish to call in question the use of our lecture theatres, but their abuse;" but if it be all abuse which he in his letter calls attention to, I would humbly ask, in case of that abuse being swept away, as it ought, what shall be their further use? It would surely be a misnomer to call a room a "lecture theatre" in which no lectures are delivered, and which is in effect the reform he in his letter advocates.

But admitting that lectures are for the most part compiled from the works of authors, will Mr. Fearnley even then affirm that they are all a "farce?" A student in a lecture

receives, *inter alia*, not only what I may call the individual experience of the lecturer, but he receives also, in succinct and impressive language, denuded of the useless verbiage with which all book lore is necessarily more or less enshrouded, facts, separated from the errors, recorded by all previous authors, together with theories of phenomena which cannot admit of positive proof, but which research, experiment, inductive reasoning, and negative results have confirmed as correct; and render all reserve theories probable and conjectural. Such at least has been my experience of the generality of lectures, and I appeal to all former students whose minds on entering college were unbiassed by a presumptive reckoning of the extent of their own knowledge through a previous four years' apprenticeship, whether they did not (like myself) frequently learn more from a one hour's lecture than they possibly could have done in six hours' hard and patient reading, had not that lecture been delivered.

As a simple example of the value of lectures, and one of frequent occurrence, I ask what takes place when a young student, even neglecting all subjects save one, precedes the lecturer in studying from his text-books, that one? Why, that he speedily becomes lost and confused, and, in despair, almost determines to throw up the profession entirely.

I have yet to learn how Mr. Fearnley could better afford to "sit dumb" (by which, I suppose, he means without benefit) than the majority of his fellow-students.

I would strongly advise Mr. Fearnley, the next time he purposes advocating reform in your pages, to choose a subject more worthy his genius, and one whose faults are more patent to the minds of your readers than the present mode of teaching by lectures.

In conclusion, I feel that an apology is necessary for occupying so much of your valuable space by what you may deem a reply unneeded.

Pathological Contributions.

CATTLE PLAGUE.

For upwards of fifty years the Continent of Europe has been a stranger to the wide spread diffusion of cattle plague which now exists. Since the publication of our last number the disease has extended far and wide from many of the places then named as centres of the infection. This was to

be expected, seeing that the pressing necessities of war prevented the full adoption of those sanitary measures on which Central Europe mainly relies for arresting the cattle plague. Passing onwards with the German army, the plague soon came into the valley of the Marne and the Seine, and according to some reports has absolutely made its appearance in Paris itself. How it passed the Prussian lines which beleaguer the unfortunate city may not perhaps be known, although we can easily conceive of many ways by which the infection might easily be transmitted inside the fortifications. The provinces of Alsace and Lorraine—especially in the district around Metz—are sustaining severe losses; indeed it has been recently stated that the cattle were there dying too fast to admit of their proper burial. Around Metz also the plague has broken out among the sheep.

To save as much food as possible the Germans are slaughtering the apparently uninfected animals, and salting down their carcases. In the Palatinate the plague is reported to exist in sixty communes, and already about 1200 beasts have been killed to arrest its progress in the neighbourhood of Kaiserslantern and Landau. Fairs and markets are suppressed in Luxembourg, and also the herding together of cattle in large numbers belonging to different owners. In Rhenish Prussia the disease has broken out in the neighbourhood of Treves and Cologne, and also in some districts near Coblentz. In Prussia proper it has reappeared in many places in which it was thought it had been exterminated. Six places near to Potsdam, according to the latest intelligence, are still the seat of the malady.

No improvement has taken place either in Pomerania or Mecklenburg. In the latter-named duchy the prevention of the pasturage of cattle in open fields, among other means of suppression, has been adopted. In Saxony no more cases are reported from Dresden; but Frieberg, Langenuime and Berthelsdorf are still centres of the infection.

In Poland also no improvement has taken place, while the spread of the disease in Galicia may be designated as most serious. Eight divisions of the country, some of which are far removed from each other, are now suffering from the cattle plague. In Transylvania the disease is on the increase.

We have no information from Hungary; but in Turkey and along the Asiatic shore of the Black Sea the disease is far from being exterminated.

FOOT AND MOUTH DISEASE.

COUNCIL CHAMBER, WHITEHALL, *Oct. 1st*, 1870.

THE following Order of Council has been issued with a view to arrest the progress of the disease:—

"The Lords and others of Her Majesty's Most Honorable Privy Council, by virtue and in exercise of the powers in them vested under The Contagious Diseases (Animals) Act, 1869, and of every other power enabling them in this behalf, do order, and it is hereby ordered, as follows:—

"1. This Order shall take effect from and immediately after the seventeenth day of October, one thousand eight hundred and seventy, and words in this Order have the same meaning as in The Contagious Diseases (Animals) Act, 1869.

"2. A Local Authority may, from time to time, with the view of preventing the spreading of foot-and-mouth disease, make regulations for the following purposes, or any of them:—

"For prohibiting or regulating the movement out of any field, stable, cowshed, or other premises in which that disease has been found to exist, of any animal that has been in the same field, stable, cowshed, or other premises with or in contact with any animal affected with that disease:

"For cleansing and disinfecting sheds and places used by animals affected with that disease.

"Provided that such Local Authority may, from time to time, revoke any such regulation: and Provided that the Privy Council, if satisfied on inquiry, with respect to any regulation made under this Order, that the same is of too restrictive a character, or otherwise objectionable, may direct the revocation thereof, and thereupon, as from the time specified in that behalf by the Privy Council, the same shall cease to operate."

"(Signed) ARTHUR HELPS."

Compared with last month very little alteration has taken place in the number of counties in which the foot and mouth disease prevails; and although the centres of infection have decreased in some of them, a great increase has taken place in others. This is especially the case in Somersetshire, which now heads the list, with upwards of 1500 centres of infection.

The returns also from Cumberland, Dorset, Hants, Wilts, and Yorkshire, are still very heavy.

A correspondent writing from the Midland Counties says, that the manner in which the Act of Parliament is carried out is perfectly useless in checking the progress of the disease. "The police sign certificates to move stock from infected premises without going near to them for several days, and when an officer visits a farm on which the disease has been reported to exist, he often leaves the farmer to act as his own inspector, receiving from him an account of the number of animals suffering from the malady, and other particulars which ought to be personally investigated. If the present system is to be continued by the local authority, the sooner the Contagious Diseases (Animals) Act becomes a dead letter the better."

PLEURO-PNEUMONIA.

The information received respecting this disease is to the effect that it prevails to a very great extent in the metropolitan dairies, although few cases are reported, the dairyman taking good care to prevent it being known that his cows are other than in a healthy condition.

Occasionally an animal is sent to the knacker's, but only when it is feared that an attempt to dispose of the carcase for human food might be attended with fine or imprisonment. Besides the prevalence of pleuro-pneumonia in the dairies of London and other large towns, the malady prevails to a greater or less extent in twenty-three counties of England and Wales, and twelve in Scotland.

SMALLPOX OF SHEEP.

The forebodings relative to the spread of the sheep-pox on the Continent, and the increased risk of its introduction into Great Britain which we gave expression to in our last number, have been fully realised. On October 4th the Customs Inspector detected the disease in a cargo of sheep—248—which arrived at Odam's Wharf from Hamburg, in the "Cosmopolitan." Fortunately at that time neither cattle nor sheep could leave the place of debarkation, as it had been set apart for the landing and slaughter of cattle, sheep, and goats brought from any port of France, or the North German Confederation. We have recent information to the effect that the malady is extending the area of its infection on the Continent, which alone is sufficient to show the propriety of issuing the Order of Council referred to.

GLANDERS.

This malignant disease still prevails in London and its immediate neighbourhood, and we fear that many persons who are in possession of glandered horses are content to run the risk of detection rather than give notice of the existence of the malady. A few of the animals have been sent under proper regulations to the licensed horse slaughterers in the metropolis, but they form a small per-centage only of the absolute number diseased.

Besides the several English counties in which glanders exists, the malady prevails also in Wales.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"Return of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of September, 1870, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Carentan .	Southampton ...	Foot-and-Mouth .	28	10	...	...	38	38
Honfleur .	Littlehampton	„	5	...	...	...	5	5
„	Southampton ...	„	132	27	...	...	159	159
St. Malo .	„	„	2	...	...	...	2	2
Total			167	37	...	...	204	204

"ALEXANDER WILLIAMS,
Secretary.

"Privy Council Office,
"Veterinary Department, 13th October, 1870."

Facts and Observations.

New Anæsthetic Compounds.—In the Physiological section of the British Association, Dr. Richardson read a report on methyl compounds. He finds that it is becoming possible to predict the action of new compounds with great exactness from their chemical composition, and also, by modifying the composition, to remove sources of inconvenience or of danger. By this line of work he hopes to arrive ultimately at an agent that will supersede chloroform and its analogues; one that will suspend sensation without danger to life. As a step in this direction he announced his discovery of "tri-ethylic ether," a new substance which had already been used as an anæsthetic, and from which excellent results were to be expected.

On Street Dust as a Ferment.—Mr. C. R. Tichborne, F.G.S., stated that his researches agreed with some of the ideas put forward by Professor Tyndall in his lecture at the Royal Institution, wherein he pointed out how the particles floating in the atmosphere might assist in the spreading of contagious diseases. Mr. Tichborne gave some analyses of various kinds of street dust, which were found to consist chiefly of stable manure and stone finely ground. Some dust taken from theatres and public buildings in Dublin was found to consist of from thirty to fifty per cent. of organic matter, and the inorganic matter was rich in iron. He found out that dust acts as a ferment in various solutions, and gave the particulars of experiments made by him to prove this point; the most interesting circumstance he made known was that the street dust, which enters the throats and noses of dwellers in town, is half stable manure, a substance not conducive to health when taken internally.—*Journal of the Society of Arts.*

Agricultural Statistics of Great Britain.—The Agricultural returns for the year 1870, issued by the Statistical Department of the Board of Trade, give the following results:—The acreage, on the 25th June, under wheat was 3,493,131; barley, 2,368,626; oats, 2,761,707; potatoes, 587,304; hops, 60,138. Compared with 1869, there is a decrease in the acreage under wheat of 195,226; an increase in barley of 117,146; a decrease in oats of 21,013; an increase in potatoes of 2093; a decrease in hops of 1654 acres. Under the same collection there was as follows:—Cattle, 5,394,756; sheep, 28,350,417; pigs, 2,168,387. Compared with 1869, there is an increase in cattle of 81,283; a decrease in sheep of 1,187,724; an increase in pigs of 237,935.—*Ibid.*

Prevention of Exports of Cattle from France.—Letters received by special messenger from Honfleur state

that a riot took place on October 12th, to prevent the shipment of cattle by steamers from that port to England. The National Guard was called out to protect the shipment in the Southampton steamers. A conflict ensued, by which five or six of the mob were slightly wounded, and a citizen shot in the head. The "Aurora," steamer, was obliged to leave in ballast for Bordeaux, and the "Seine," steamer, was also obliged to leave for Havre. The Southampton and Littlehampton boats were not allowed to take any live stock or produce.—*Pall Mall Gazette.*

Lead-Poisoning.—Mr. Alexander Gordon, in a paper on the prevention of lead-poisoning, has pointed out that, though medical and scientific men had long been unanimous as to the advantage of abolishing lead as a means for the storage or distribution of water used for dietetic purposes, the conviction as to its danger had not yet fully forced itself upon the public mind. He showed from medical sources that many obscure diseases, as well as diseases which assumed a more palpable form, were due in this country to the impregnation of water with lead; and that both soft and pure, and hard and impure waters were alike, under certain circumstances, contaminated; and that, as lead was a cumulative poison, however small the contamination might be, it would in the end, if such waters were employed, act with destructive effect. The only substitute yet manufactured which, while it conserved the purity of the water, was both ductile and cheap, was that invented by Mr. Haines, C.E. It consists of a lead pipe, with an internal tube of block tin, both having been previously welded together so as to form a homogeneous whole. By this process the piping retained all the flexibility of the lead, while the inner tube of tin was strong and thick enough to prevent any access of water to the exterior leaden pipe.—*Journal of the Society of Arts.*

Necessity for Foreign Cattle Markets. — Food supply is an imperial question, and the legislature ought to make such broad and general regulations on the subject as would benefit the nation as a whole, without contravening the principles of free trade. The home cattle and meat markets should be separated from the foreign; and special regulations should be made for the latter which are not required for the former. Such a separation would, in the end, be advantageous to both departments of this important trade. The home breeders, dealers, and salesmen are, on the whole, in favour of separate and distinct establishments; the foreign traders would be largely benefited by the increased accommodation for and development of their trade; and the public, always more or

less afflicted by the dearness of meat, would gain immensely by a larger supply, in better condition, and with improved arrangements for slaughter and distribution.—*Food Journal.*

The Effects of the Siege of Paris on the Consumption of Horseflesh.—The Paris papers announce that horseflesh has already become an important article of consumption, and one gentleman residing near the *boucherie hippophagique* in the Rue Pernetti, writes to the *Débats* to say that his neighbours and himself like it very much. A municipal notice has been issued, announcing the opening of eleven fresh depôts for the sale of horseflesh. The increasing number of horses daily killed and supplied to the public affords another proof that *l'appétit vient en mangeant.* The daily consumption of horses, which at the beginning of the siege was only twenty or thirty, rose in the last three days of last week to 141, 195, and 275 respectively.—*Times.*

Famished Dogs in Paris.—The *Débats* complains of the number of famished and diseased dogs which for more than a fortnight have been roaming about Paris, and calls on the authorities to guard against the danger of their becoming mad, or of their corpses adding to the numerous other sources of infection.—*Ibid.*

Food Supplies in Beleaguered Paris.—The *Bulletin Administratif* of the 26th of September stated that at that time the Government had in Paris a store of 292,000 quintals, or cwts., of grain, in addition to which there was in the hands of private dealers a further quantity of 155,000 quintals—making a total of 447,000 quintals, sufficient, at the estimated requirement of the population of 7000 quintals daily, for a period of two months or two and a half months. The meat store consisted of 24,600 oxen and cows, 150,000 sheep, and 6000 pigs, or an estimated ordinary supply for two months.

Effects of the Drought on Agricultural Produce.—The advance of the year and the extraordinarily prolonged absence of rain are causing the gravest apprehensions to farmers, who have no grass, and are losing the turnip crop (at best a bad one) by lice, and who look to the wintering of stock with anxiety. Since the rainfall table has been kept at Malton (twelve years) the past nine months show the driest and fully account for the present condition of things. The comparative rainfall for the first nine months of the past twelve years is as follows:—1859, 17·78in.; 1860, 25·72in.; 1861, 18·36in.; 1862, 21·04in.; 1863, 18·69in.; 1864, 14·84in.; 1865, 14·26in.; 1866, 24·07in.; 1867, 23·61in.; 1868, 15·19in.; 1869, 20·08in.; and 1870, 13·50in., the driest year recorded.

THE VETERINARIAN, NOVEMBER 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

THE OPENING OF THE SESSION AT THE ROYAL VETERINARY COLLEGE.

A goodly number of practitioners, second sessioners, and newly entered candidates for membership, filled the theatre of the college on the opening day; albeit we missed some old familiar faces which we have been accustomed to see at these gatherings. Professor Tuson delivered the inaugural address; and at the commencement referred to the matriculation examination, which for the first time was conducted by an independent educational body, the College of Preceptors. Dr. G. A. Jacobs, the Dean of the college, presided over the examination, which included questions in English grammar and parsing, also reading aloud, writing from dictation, and arithmetic. Forty-five candidates presented themselves at the first meeting of the board, and of these forty-one passed, and four failed to satisfy the examiners; at two subsequent meetings fourteen candidates were examined, and twelve passed.

It is understood, we believe, that a candidate who fails to obtain admission to one college will not be received at either of the others until he has submitted to the required test, and acquitted himself in a satisfactory manner. So far the principle of testing the qualification of the candidate previously to his commencing a course of scientific study may be said to be established on a proper basis, and all necessary changes in the method of applying the test can hereafter be carried into effect without difficulty. There remains something to be done, however, before the final test will be considered complete—the much-talked-of practical examination. We gather from the last report of the proceedings the of Council of the Royal College of Veterinary Surgeons, that this important desideratum will be carried into effect as soon as the necessary arrangements can be made. Thus, step by step we are advancing, slowly perhaps, but surely, and always with a definite object in view.

The lecturer in one portion of his address touched upon a very delicate point, when he spoke of the degradation

which is inevitably associated with the idea of using knowledge and skill "simply and solely as a means of making money." Are there not many in the veterinary profession, and perhaps in other professions, who would retort with astonishment, what other object can there be? On this subject we are forcibly reminded of the words of a great master of English prose, who thus stigmatises the exclusive love of money as the ultimate object of all work:—

"But in every nation there are a vast class who are ill-educated, cowardly, and more or less spiteful. And with these people just as certainly the fee is first, and the work second, as with brave people the work is first, and the fee second. And this is no small distinction. It is the whole distinction in a man: distinction between life and death *in* him, between heaven and hell *for* him. You cannot serve two masters; you *must* serve one or the other. If your work is first with God and your fee second, work is your master, and the Lord of work, who is God. But if your fee is first, and your work second, fee is your master, and the lord of fee, who is the devil; and not only the devil, but the lowest of devils, the 'last-exserted fiend that fell!' So there you have it in brief terms; work first—you are God's servants; fee first—you are the fiend's."

Notwithstanding this strong way of putting the question, no one doubts the importance of the fee; most professional men have to live by their profession, but the best work of their lives is never paid for at all. Veterinary surgeons may with truth claim that they are seldom overpaid for their work, not that circumstances have nothing to do with the question of their impelling motive. If they are honest workers they will prefer to lose their fee and cure the patient, to getting their fee and losing their patient.

Students who are now passing through the prescribed curriculum will find enough of serious subjects to fill up their time for the short period of two sessions, and we counsel them not to be alarmed about the effects of unremitting attention to their studies. It takes a great deal of hard work with brain or hands to upset a man's digestion. It should be remembered that most of the popular amusements of the day are enervating rather than invigorating in

their influence. Temperate living and regular exercise will carry the student safely through his labours, even should he now and then addict himself to "the wasting of the midnight oil."

The college is conveniently situated in regard to the breezy hills of Highgate, and those who complain of "feeling cloudy," will do well to recollect that a good draught of fresh air "unmixed with smoke from a chimney or a cigar" will blow the cobwebs from the "o'erwrought brain," and give new life to every fibre of the body.

All over the country there is work for scientific men, and the student of to-day will find himself in a few months engaged in difficult and obscure inquiries; it is not, therefore, too much to expect that he will devote every moment of his pupilage to honest efforts to fit himself for the business of his future life.

Extracts from British and Foreign Journals.

ON THE REAL NATURE OF DISEASE GERMS.

By Lionel S. Beale, F.R.S., Fellow of the Royal College of Physicians, and Physician to King's College Hospital.

Before I proceed to describe the characters of the particles suspended in animal fluids, having virulent contagious properties, it is very desirable to draw attention to the minute particles of bioplasm, which may be demonstrated in many specimens of simple exudation. From this subject we shall pass on to the consideration of other forms of "exudation" which possess specific disease-producing properties. We shall find that by a careful microscopical examination of fluids which experience has proved to us have contagious properties, facts of great interest are disclosed which have an important bearing on the question of the nature of the poison of contagious diseases. Many such fluids are clear like water, and quite as transparent when examined by the unaided eye only. When we come to subject them to examination with the aid even of the highest powers yet made, although solid particles are detected, and sometimes in great number, we observe nothing peculiar to these fluids alone—nothing which would enable us to form any conception of the wonderful properties they possess—nothing that would attract the attention of the chance observer, or excite the interest of any one who had not long and carefully studied

the matter. Nevertheless, what we are able to demonstrate is of vast importance, and with the aid of other observations and experiments, we may form, I think, clear notions of the nature and origin of these morbid poisons, and of the manner in which they produce their marvellous and oftentimes disastrous effects. Much yet remains to be disclosed, but we shall soon learn more if we will but work and think independently, and accept the teaching of facts of observation and experiment, while careful to avoid being misled by the dogmatism of those who obstinately persist in asserting that *all vital phenomena* are to be explained by physics and chemistry, and try to make people believe that living organisms are mere machines constructed by force. All truly *vital* phenomena must necessarily be altogether out of the range of mere physical investigation. Nevertheless, to such extravagant lengths has the opposite view been carried of late, that it has even been seriously stated that he who refuses to look upon life as mere inorganic force, opposes investigation, and looks upon the structure of man's organism as a subject unsuitable for scientific exploration. It would be as reasonable to assert that a man who is to be a scientific investigator must commence by confessing his belief in the truth of a conclusion which has long been proved to be false by reason and observation.*

In spite of all the evidence adduced to the contrary, and notwithstanding the failure of all attempts to prove the vegetable nature of disease germs, Mr. Simon still adheres to this doctrine. He seems to place great reliance upon the extraordinary statements of Hallier, which have not been confirmed, and ought to be received with the greatest caution. In his Report for 1869, Mr. Simon makes the following remarks upon this subject:—"Knowing that all contagia (as such) are distinct one from the other, and believing that each of them has its essence in the so-called microzymes which it contains, we by implication impute to the microzymes that in different diseases they are not identical; and as we affirm them to be dynamically different, so also we assume that, under well-devised differential experiments, other signs of their specificity may be brought to light, and for each sort of them a definite genesiology be

* The physical theory of life is, however, less popular now than it was a few years ago. Quite recently its strongest advocates have expressed themselves more cautiously than has been their custom hitherto. They have discovered that the "tendency of thought" is fast setting in another direction. They have, therefore, modified their statements without withdrawing them, and have made preparations for abandoning their position without acknowledging defeat.

written." The learned author of this sentence appears to have accepted the doctrine that each contagious disease is produced by a specific vegetable organism. Now it appears to me that the arguments upon which this view is based break down as soon as they are analysed and the facts advanced in their favour carefully investigated. This part of the subject has been already considered in my work 'On Disease Germs: their Supposed Nature.' It was also discussed in my Report on the Cattle Plague, printed in 1866.

I will now pass on to consider the actual nature of the living germs in various "exudations," some specimens of which were described and figured by me as long ago as 1863.

Simple Exudation.—The transparent colourless fluid which moistens the surface of a superficial wound after it has ceased to bleed is poured out from the capillaries, or from the lymphatic vessels, or from both sets of vessels. This fluid, besides containing albumen in solution, contains multitudes of minute particles of bioplasm, which grow and multiply outside as well as within the vessels. These form fibrin and matters more or less allied to it, and perform an essential part in the healing process, or in the formation of pus, as the case may be. These minute particles of living matter are present in the blood and lymph in countless numbers. They are concerned in the production of fibrous tissue outside the capillaries, a change which occurs in many pathological processes, and also in the production of pus-corpuscles, and other "corpuscles" in the same situation, in disease. All "exudations" contain these particles of living matter. The following paragraphs are taken from a paper written by me in 1863:*—

"When the capillary vessels are distended, as in that extreme congestion which soon passes into inflammation, a fluid which possesses coagulable properties transudes through the stretched capillary walls. It is probable that in such cases minute and narrow fissures result, which, however, are too narrow to allow an ordinary white or red blood-corpuscle to escape, but, nevertheless, wide enough to permit many of the minute particles of the living or germinal matter (the existence of which in the blood has been already referred to) to pass through. The small protrusions upon the surface of the white blood-corpuscle might grow through the capillary walls, become detached, and pass into the tissue external to the vessels. Such minute particles of living matter external

* "On the Germinal Matter of the Blood, with remarks upon the Formation of Fibrin." Microscopical Society, December 9th, 1863. See 'Trans. Mic. Soc.,' April, 1864.

to the vessels being surrounded with nutrient pabulum, and stationary, would grow and multiply rapidly, while a similar change would of course go on in the now stagnant fluid in the interior of the capillary. The result would be exactly that which is observed, viz. the presence of a vast number of cells like white blood-corpuscles in the *interior of the capillary vessel, and immediately around its external surface*, and sometimes these extend for some distance in the substance of the surrounding tissue, and they increase in number.

"I venture, then, to conclude that many of the clear fluids which have been considered as '*exudations*' from the blood, really contain a multitude of extremely minute particles of living matter, which are intimately related to the white blood-corpuscles, and that these grow and become one source of the small granular cells or corpuscles which are so familiar to all who have studied morbid shanges in the tissues as they occur in man and the higher animals.

"Some of these active living particles may be so small as to be invisible by a power magnifying 5000 diameters. I have seen such particles, less than the 50,000th of an inch in diameter, and have no reason whatever for assuming that these are really the smallest that exist."

These minute particles of bioplasm multiply freely, but they may also be derived from the white blood-corpuscles, and from other forms of bioplasm. As the blood coagulates they undergo change, die, and help to form the non-living fibrin. In every clot numerous white blood-corpuscles, also composed of living matter, can be detected. In coagulation it is probable that the most minute particles of bioplasm change first, and become fibrin. After a time the white blood-corpuscles also die, and thus the coagulum of fibrin continues to increase for a short time after coagulation has commenced. The lines round the red blood-corpuscles seen stretching from one to the other in a drop of coagulating blood indicate the earliest stage in the formation of fibrin. The minute particles of bioplasm may be seen actually undergoing change. The bioplasm of the blood is derived from the bioplasm originally found in the vessels of the germinal area at a very early period of development, from the bioplasm of the capillary walls, which is very abundant in some capillaries, and projects into the cavity, and from the lymph and chyle bioplasm which is being continually poured into the vascular system and mixed with the blood.

If the clear transparent material which moves round the cells of *Vallisneria* and other plants be carefully examined under very high powers magnifying upwards of 2000

diameters, it will be discovered that this is not a simple fluid like water containing the nucleus and chlorophyl. But the apparent fluid has suspended in it an infinite number of particles of living matter, like those of which the amœba, white blood-corpuscle, and other forms of living matter consist. With high powers the slightly opalescent appearance may be detected, and by careful focussing, the minute particles of living matter will be brought into view. The movements of the fluid may therefore be compared with the movements of the living bioplasm of an amœba. In the circulating juice of many plants similar appearances may be observed, and in the blood and circulating fluid of all animals, and in man himself, minute particles of living matter are to be demonstrated in immense multitudes. These are diffused through the fluid, and to them is probably due the movement of the contents of the finer vessels and spaces. This constituent of the blood, seen with such difficulty that its presence is not yet admitted by observers, is probably the most important, for its increase or diminution may occasion serious disease or death. This almost impalpable living moving matter is the seat of many very important changes, and is perhaps influenced before any other constituents of the body when certain poisons and disease germs find their way into the blood. "Protection," after successful vaccination, and the escape from a second attack, which is the rule in the case of many contagious fevers, is most likely brought about by changes induced in the living matter under consideration.

In health it is upon this material that the coagulable property of the blood is mainly dependent, and it is this which in great part undergoes conversion into what we call fibrin, when the blood is removed from the living vessels or "dies." If destroyed it may, under favorable circumstances, be renewed by the appropriation of nutrient matter. The white blood-corpuscles are intimately related to this living bioplasm, and take part in its formation. I believe they bear to it the same relation as the "nucleus" in the cell of Vallisneria bears to the living particles suspended in the fluid, while the red blood-corpuscles of the blood correspond to the chlorophyl particles in the rotating fluid contents of the vegetable cell. Attention will presently be drawn to the vast importance of this living fibrin-forming matter in various exudations, and it will be found that a simple explanation of many most important morbid phenomena may be given. Now in the fluid exudation or virus which produces a "poisoned wound" when inoculated we also find minute particles of living bioplasm.

Many arguments will be advanced herein in favour of the view that the virulence of the poison is due entirely to the living particles, and not to the fluid in which these are suspended. In the case of some of these poisonous fluids we are able to study the production of the contagious virus, and we may even in some cases succeed in tracing out the manner in which the material with the wonderful poisonous property originates.

In some forms of inflammation of serous membranes the process may be made out, and a conception formed of the several changes which occur, and at last end in the development of the poison. The morbid change is sometimes limited to the effusion of serum and the production of "inflammatory lymph," but in other instances the inflammation proceeds to a further stage, and actual pus is generated. Peritonitis is an example of an inflammation which much more frequently proceeds to the formation of pus than inflammation of other serous membranes. The greater vascularity of the peritoneum as compared with allied textures may perhaps account for this fact. It is interesting to discuss briefly the characters of the different "inflammatory products," as they are called, resulting from peritoneal inflammation, varying in intensity.

In *slight inflammation* there is great vascular distension, accompanied as in other cases by the escape of exudation in which are suspended particles of bioplasm. The exudation coagulates upon the surfaces of the serous membrane, perhaps glueing them together. The fluid portion is gradually absorbed, and if the case progresses to recovery, much of the coagulated matter is also taken up, a little being transformed into fibrous tissue, resulting in a few "adhesions," or mere thickening of the serous membrane, as the case may be.

When, however, the intensity of the inflammation is more marked, the little particles of bioplasm originally derived from the white blood-corpuscles, grow and multiply, and with the fibrinous matter in which they are entangled form transparent flocculi, which are suspended in the serous part of the exudation, or adhere here and there loosely to the peritoneal surface. Many of these flocculi are found to contain multitudes of bioplasm particles, and oftentimes a vast number of these are suspended in the fluid, and congregated here and there, form little collections upon the surface of the delicate serous membrane, to which they adhere and where they grow.

If the inflammatory process still continues, and increases in severity, the vascular congestion becomes more marked,

and the exudation is poured out from the blood more abundantly; the masses of bioplasm increase in number yet faster, and the exudation in consequence appears nearly opaque. The flocculi are of a yellowish colour, and look very like pieces of clotted cream which stick here and there to the peritoneum, covering the intestines and the inner surface of the abdominal parietes. Not unfrequently the surface is smeared over in places with whitish pasty masses of soft cream-like matter, in the intervals between which the highly-injected vessels stand out with great distinctness. The masses of bioplasm would now be called *pus-corpuscles.* Here, then, is an interesting example of *the production of pus-corpuscles by the rapid growth and multiplication of particles of bioplasm which were once in the blood, and intimately related to the white blood-corpuscles.*

But further: if, as is well known, a little of this material were to be introduced into the body, as may unfortunately happen from a dissection-wound in the course of making a a post-mortem examination, terrible inflammation may be excited in the person inoculated. The most tiny morsel of this virulent, rapidly-multiplying morbid bioplasm, may give rise to a dreadful form of "blood-poisoning," which may end fatally and in a very short time.

In some cases similar poisonous particles which have been derived from a diseased organism are so very minute and light that they are supported by the air, and may find their way into the blood of a healthy (?) person through his respiratory organs, or may gain access to his circulating fluid by traversing the narrow chinks between the epithelial cells of the cuticle.

Nature of Virulent Disease Germs.—Now, what is the nature of the matter inoculated, which produces these dreadful results? The virulent poison which sometimes destroys life in cases of dissection-wounds cannot be attributed to the presence of vegetable germs, for the period of its most virulent activity is very soon after death, but before the occurrence of putrefaction, when the vegetable fungus germs multiply.* A punctured wound is not dangerous if putrefactive decomposition has taken place, because, although bacteria are developed in immense numbers, *the real contagious virus is dead.* The vegetable germs, in fact, grow and flourish upon the products resulting from the death of the dangerous animal living poison. In short, this material is living and very actively-growing germinal matter; living matter which retains its life after the death of the organism in which it

* See 'Disease Germs: their Supposed Nature.'

was produced has occurred; living matter which *has descended directly from the living matter of health*, but which has acquired the property of retaining its life under new conditions; living matter destroyed with difficulty, and possessing such wonderful energy that it will grow and multiply when removed from the seat of its development and transferred to another situation, provided only it be supplied with suitable nutrient pabulum—and it is to be feared the ordinary nutrient fluids of a perfectly healthy organism are eminently adapted for the nutrition of this destructive virus.

The Pus of Purulent Ophthalmia—Gonorrhœal Pus.—Such is the vitality of these forms of bioplasm that they will grow and multiply upon certain mucous surfaces if placed there; not only so, but the living particles will retain their vitality for some time after their removal from the surface upon which they grew. They may even be transported long distances by the air, or they may remain for some time in moist cloths without being destroyed. When once a room has been infected with such particles, some weeks may elapse before the death of all the specific disease-carrying germs has taken place.

The pus possessing specific contagious properties cannot be distinguished from ordinary pus. It differs indeed from this last, but not in appearance, chemical composition, or physical properties. It differs in *vital power*.

Vaccine Lymph.—Vaccine lymph which has been just removed from the growing vesicle will be found to contain a great number of extremely minute particles of bioplasm, which may be well seen under a power magnifying from 1000 to 2000 diameters. In 1863 I made a drawing of the appearances I observed in the bioplasts from a drop of perfectly fresh lymph which had been transferred to a warm glass slide, and carefully covered with very thin glass, under the $\frac{1}{26}$th object-glass, which magnifies about 1800 diameters. The results are represented in the plate accompanying a memoir which was published in the 'Quarterly Journal of Microscopical Science' for April, 1864.

In vaccine lymph which has been kept for some time in glass tubes multitudes of very minute particles are observed, and these exhibit the most active molecular movements. These particles have often been termed *débris*, and have been regarded as quite unimportant elements of the lymph. To them, however, the active properties of the lymph are entirely and solely due. And I should be no more inclined, in the absence of the most positive evidence to the contrary, to regard the fluid portion of the vaccine lymph as the active

material, than I should be to assume that the fluid in which the spermatozoa were suspended was the fertilizing agent, and that the spermatozoa themselves were merely epithelial *débris*, and quite unimportant; or to infer that the fluid in which the yeast fungi or bacteria were growing was the active agent in exciting fermentation, while the actually growing, moving, and multiplying particles were perfectly passive. The germinal particles in all cases are, without doubt, the active agents, and it seems to me as much opposed to the facts of the case to maintain that the *materies morbi* of cattle plague and other contagious fevers is a material that can be dissolved in fluid, and precipitated and re-formed, or sublimed as a volatile substance, as it would be to look upon any living organism as the result of the concentration of an albuminous solution, and capable of resolution and precipitation.

The little particles I have represented in my drawings could not be distinguished from the minute particles of living pus, or other germs of living germinal matter, and I think they consist of a peculiar kind of living matter, the smallest particle of which, when supplied with its proper pabulum, will grow and multiply, giving rise to millions of little particles like itself, each having similar properties and powers.

I consider it to be almost certain that the material of which these particles are composed has the power of forming matter like itself from pabulum around it, which differs from it in properties and composition. Such living germs may pass from the organism on which they grew to another, and will grow and multiply there if they meet with the proper pabulum. The only condition in which matter is known to exhibit these powers of self-multiplication is the living state.

M. Chauveau * described these same bodies in 1868. It is evident he had not seen my observations, published in the Cattle-Plague Report, or my previous researches published in the Microscopical Transactions for 1863.† Chauveau showed that the active particles subsided after forty-eight hours, and that no effects were produced by inoculating the albuminous supernatant fluid, while the full effects were produced by vaccinating with the deposit. As would be supposed from the excessive minuteness of these bodies, they are not to be separated by ordinary filtration, but if the fluid containing them also contains a trace of coagulable fibrin

* 'Comptes Rendus,' February, 1868.

† "Beale had, before Chauveau, declared that the 'active properties of vaccine lymph are entirely and solely due' to these corpuscles. He has figured them."—Dr. Farr, 'Report on the Cholera Epidemic of 1866, p. lxviii.

diffused through it, this by contraction after coagulation would filter off the little bioplasts, and leave a serum perfectly free. Dr. Farr calls the living particles *biads* (βια, force, βιος, life), and speaks of the vaccine particles as *vaccinads*.* These words are better than *microzyme*, adopted by Mr. Simon and others, because they involve no theory save that the particles are *living*, while the latter term affirms them to be of the nature of a ferment acting like yeast.

The circumstance that vaccine lymph retains its activity if kept in a tube for several weeks, seems conclusive as to the possibility of the particles retaining their vitality for a considerable time after they have been removed from the place where they grew; the arguments advanced, as proving that the active power resides in the particles and not in the fluid, being admitted. It is not more difficult to explain the fact that such living particles may be dried without losing their power, than that an amœba or rotifer should exhibit the same peculiarity. As this property is observed in connection with many of the lower forms of life, we might almost anticipate that the living matter from the highest organisms, if reduced to a degraded condition, would retain its vitality under circumstances which would cause its death in its normal condition. Yet it must not be supposed that these particles, any more than the "dried animalcules," are really dried. Some moisture is retained by the particles within the imperfectly-dried mass. Complete desiccation will destroy life in both cases. Since it has been shown that the active powers of vaccine lymph reside in the minute particles of living germinal matter, and it has been proved that these may be dried (imperfectly) without loss of power, it is surely not too much to conclude that the *materies morbi* of other and allied contagious disease is probably composed of living particles, which have the same property of living for some time in a state of partial desiccation.

Living Germs of Variola.—I have examined the contents of the little vesicle which rises in small-pox at different stages of its development, and find, as in allied pathological changes, vast multitudes of minute particles of living matter or bioplasm, but, as will have been anticipated from what has been already said, these present nothing peculiar or characteristic, nothing that would enable us to say if we saw these particles under the microscope that they were obtained from a small-pox vesicle, and would certainly give rise to that disease. I have made a drawing of some of the varioloid bioplasts from a well-developed vesicle on the fifth day of the disease, and also from a vesicle which was just making its appearance.

* 'Report on the Cholera Epidemic of 1866,' p. lxx.

Living Germs of Fever.—As was shown experimentally by Dr. Sanderson, a mere trace of blood serum was sufficient to propagate cattle plague. A very small portion of blood or of the tissues of an infected animal had the same effect. Nay, the contagion is so subtle that in this as well as in many other contagious diseases, the breath of the diseased organism contains numbers of the potent particles of poison, and in this manner the very air of a considerable space or even district may become infected.

In the blood in the smaller vessels, as well as in the mucous secretions of the mouth, intestinal canal, and in the milk of animals suffering from this disorder, I have found multitudes of minute particles of bioplasm, which, as long as they remain alive, are, without doubt, disease-carrying particles.

The disease germs of many contagious fevers will retain their vitality in water and other fluids for a length of time, and there is reason for concluding that some of these poisons not only grow and multiply in media different from any in the organism, but that in the course of such growth and multiplication they acquire still more virulent properties. Dr. C. Macnamara has discovered that cholera poison in water after exposure to the sun for a few hours becomes extremely virulent, and that this period corresponds with the development of multitudes of vibrios; but that after the lapse of a day or two, when the vibrios will have disappeared and given place to ciliated animalcules, the fluid may be taken with impunity.

Syphilitic Disease Germs.—This is another of those remarkably special living poisons which may be suspended in serum and other fluids, and retain its vitality for a length of time.

There is reason for thinking that a single epithelial cell may carry multitudes of active particles of syphilitic poison, one of which introduced into the blood or lymph of a healthy person would probably grow and multiply, and give rise to pathological changes characteristic of, and quite peculiar to this particular poison.

We know that the syphilitic poison may retain its specific characters in the organism for years, from time to time giving rise to local pathological phenomena, which are characteristic of this kind of morbid bioplasm. It is impossible from the facts of the case to arrive at any other conclusion than this: that a certain portion of the living matter remains in the organism, and that under certain favorable circumstances this grows and multiplies, producing disease. Particles of this virulent poison may be transferred from the infected organism to a healthy one, and contaminate it, even many

years after its introduction into the first had taken place. Of syphilitic bioplasm there are different kinds, giving rise to different pathological affections belonging to the syphilitic class. Indeed, some facts render it probable that there are several different species or varieties of syphilitic poison, instead of only one or two.

One very remarkable property of the poison of syphilis is, that it may be re-inoculated into the same organism over and over again, until inoculation ceases to produce any specific effect. As soon as this is the case, it is said the organism is "protected." But such protection sometimes cannot be procured until successive inoculation has been practised during several months, and, as has been remarked, the remedy is in many respects worse than the acquired disease, besides being, and on many grounds, quite unjustifiable.

Living Disease Germs in Secretions.—The living germs of many fevers pass from the blood into the secretions. The urine, the secretions from the mucous membrane of the nose, mouth, stomach, and intestinal canal, contain them in large numbers. There is reason to think they may also escape in the secretion of the sweat and sebaceous glands. In the excrements there can be no doubt disease germs exist in vast numbers in typhoid fever, in cholera, and in some other diseases. Even in the milk, in the tears, in the saliva, they are present. Some of the living particles of contagious (?) bioplasm in the milk from a cow suffering from cattle plague are represented in my report, as well as particles of bioplasm and fungi in vaginal mucus from another animal suffering from the same disease. The spherical form, sharp, well-defined outline, and the high refractive power of the envelope of the fungi, positively distinguish them from disease germs.

Living tubercle germs will not be considered as very closely related to the contagious particles which are the active agents in the propagation of contagious fevers. There is, however, reason to think that particles of living growing tubercle exist sufficiently minute to be supported by the atmosphere and carried long distances; while there are many facts which are considered by some sufficiently conclusive to justify the opinion that tubercular disease of the lungs is at least in some instances *contagious*. And it is certain that the most recent observations in connection with the subject of the nature and mode of propagation of tubercle, so far from militating against this view, tend rather to support it. That tubercle is not eminently contagious is certain, while the probabilities of minute particles of living growing tubercle escaping into the air while it remains in the air-cells of the

lungs, or rising in a living state into the atmosphere from the sputum after its expectoration, are not great. At the same time neither circumstance can be regarded as impossible, neither view held to be untenable.

The manner in which the bioplasm of tubercle multiplies may be studied in tubercular inflammation of the membranes of the brain:—The living matter may be seen extending round a small artery in the areolar tissue of the external coat. The living particles obstructed in the vessel make their way through its lining membrane and between the fibres of the muscular coat, until they reach the areolar tissue outside, where they grow and multiply. By their accumulation, the pressure upon the vessel becomes greater, and at last its calibre will be completely obliterated. From such tubercle collections minute germs may be readily detached, and after having found their way into a previous lymphatic vessel, or blood-capillary, might be carried to distant parts and grow there. In this way tubercles are formed in many different parts of the body and in the substance of many different tissues and organs. If a particle of fluid, holding tubercle germs in suspension, were introduced by inoculation into a healthy organism, the disease might be produced.

Cancer Germs.—While it is almost certain cancer might be introduced by direct inoculation into the organism of a healthy person, many circumstances render it in the highest degree improbable that living germs detached from the growth could, under any circumstances, gain access to another organism through the air breathed, or in any other manner pass into the blood or tissues, as long as the surface remained uninjured. Cancer germs would probably live for some time in animal fluids out of the body, and it is by no means impossible that we may succeed in growing them in glass vessels away from their natural seat of growth, and watch the changes which occur under our microscopes; but it is exceedingly doubtful if these germs would long retain their vitality if removed from the fluid which nourished them.

Between the cancer germ, which cannot be conveyed by the air from the diseased organism to one not infected, and the germ of scarlatina, which will retain its vitality for weeks after it has escaped from the organism in which it was produced, and may readily gain access to healthy organisms in the air they breathe, we have examples of living disease germs manifesting powers of retaining their vitality when free in many different degrees. In other words, these poisons

differ remarkably in the facility with which they are propagated, or spread from person to person. All exhibit the same appearances, though they differ remarkably in power. The capacity for resisting death, due to some inherent power and not to their chemical composition, varies much, some being capable of living for weeks or months away from the fluids of the body, while others die within a very short time after their removal from the seat of growth.

[In this paper a number of remarkable forms of contagious matter or virus have been referred to. These resemble one another in general appearance. Neither by its form, chemical composition, or other demonstrable properties, could the vaccine germ be distinguished from the small-pox germ, or the pus germ from either. All resemble the minute particles of bioplasm of the blood from which they have probably been derived, but from which they differ so remarkably in *power*. Concerning the conditions under which these germs are produced, and of the manner in which the rapidly-multiplying matter acquires its new and marvellous specific powers, we have much to learn, but with vegetable organisms the germs have nothing to do. They have originated in man's organism. Man himself has imposed the conditions favorable to their development. Man alone is responsible for their origin. Human intelligence, energy, and self-sacrifice may succeed in extirpating them, and may discover the means of preventing the origin of new forms not now in existence.]—*Monthly Microscopical Journal.*

PERFORMANCE OF VIVISECTION.

Two papers of considerable importance were read at the British Association by Dr. Brown-Séquard; but they were the more so because they led to the following remarks from Professor Huxley, who is especially and very properly desirous of removing experiment from unnecessary bans:

Professor Huxley said, the great theoretical problem they had now to determine was what effect artificial modifications and conditions had upon living organisms—whether they produced changes which, being transmitted hereditarily, became the basis of new races. Referring to a resolution which had been brought forward at a former meeting, which endeavoured to pledge the association to abstain from making grants of money to persons engaged in experiments which involved vivisection, he said they had before them that day one of the most experienced physiologists and vivisectors of

his day, and he had only to ask the audience to form their own judgment as to whether Dr. Brown-Séquard was likely to inflict one particle of pain upon any creature whatever without having a plain and definite purpose in view. For himself he might say that nothing was more grievous to him than to think of the existence of pain in anything whatever. Neither Dr. Brown-Séquard nor himself was indifferent to pain, and he hoped that in no sense were they cruel. He thought that the gentleman who brought forward the resolution to which he had referred, and the gentleman who supported him, hardly knew what they were dealing with. If his friend Dr. Brown-Séquard would pardon his referring to a matter personal to him, he would remind the meeting that that great experimental physiologist, and that accomplished vivisector, who had, he supposed, performed as many vivisections as any man in the world, some years ago thought it advisable to turn the vast knowledge of the diagnosis of disease which he had obtained by this means into actual practice, and he (Professor Huxley) could assure them, from what he knew, that before long his wonderful mastery over symptoms caused his consulting-rooms to be absolutely crowded by human beings suffering under multiform varieties of nervous disorders, who sought at his hands and from his knowledge that relief which they could not obtain elsewhere.

The prevention of cruelty to animals, when understood in its proper sense, was as good an object as men could devote themselves to, but when they confounded the brutal violence of the carter or the wife-beater with an experiment carried out by a man of science, gently and for the purpose of relieving misery, the enthusiasts in that cause should change their name, and convert themselves into a society for the promotion of cruelty to mankind. If that question came before the Association again, and he hoped it would, he trusted they would recollect that the order of nature was such that certain kinds of truth were only attainable by experiments upon living animals, and that when they might result to the welfare of thousands and thousands of untold human beings who might otherwise be suffering unimaginable misery, those experiments were perfectly justifiable.

A NEW POISON.

In a paper addressed to the French Academy of Sciences, MM. Rebuteau and Peyre have given a description of a plant which grows in the vicinity of the French settlement of

Galboon, and which the natives call *m'boondoo*. They have gathered it themselves in a moist soil in the neighbourhood of the River Cano, at thirty leagues from the frontier. It is very difficult to procure, because the sorcerers of the country conceal the plant with great care from the profane, so that its properties are still in a great measure a mystery. The roots vary in thickness between three centimetres and one (a centimetre is four-tenths of an inch) ; their length varies between fifty and seventy. The rind, whether fresh or dry, is reddish outside and a vivid red within; the root itself is mere hard wood. Both this and its bark are exceedingly bitter; their infusions, even when considerably diluted, still retain this taste to a high degree. They yield abundant precipitates, even when treated either by iodide of potassium or phospho-molybdic acid; whence it may be concluded that they contain at least one if not several alkaloids. The effects produced upon animals may be briefly stated as follows :— When a very weak dose is injected under the skin of the frog, the poison only produces constraint in the limbs, a sort of paralysis, which prevents the creature from leaping easily, and makes it crawl like a toad. But, notwithstanding, the substance does not act like woorara, since the power of muscular contraction is not impaired when the operator excites the nerves. With a dose of three milligrammes, the extract introduced under the skin, after causing the constraint alluded to, brings on tetanic convulsions, when the animal is touched, or the table on which it lies is struck with the hand or otherwise. Nevertheless, the creature does not become rigid, as when poisoned with strychnine ; and if it has received a weak dose, it will recover in the course of a few hours when put into water. Hence it may be concluded that the poison is rapidly eliminated from the animal economy.—*Galignani.*

THE EFFECT OF MEDICINES ON TEMPERATURE.

We are glad to notice what we hope is the commencement of a study by veterinary surgeons of the phenomena of temperature in the diseases of animals, and the effects which medicines may have in influencing these phenomena. Mr. F. J. Mavor, M.R.C.V.S., has forwarded us a paper in which he records some careful observations on the horse, which appear to prove that the subcutaneous injection of atropia considerably elevates temperature, and that this effect persists for a considerable time. This observation accords with the results obtained by Mr. Oglesby, of Leeds, in experiment-

ing with atropia on rabbits. We have not space to insert Mr. Mavor's paper at length, and perhaps it will be best that some of the more general statements which he makes as to the effect of drugs on temperature should be carefully revised by him, as they seriously conflict with the results obtained by a large number of competent investigators. But, in regard to atropia, he has advanced some unquestionably interesting and valuable facts, which are recorded with a minuteness that entitles them to credit.—*Lancet.*

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

TWO CASES OF TWISTING OF THE UTERUS.

By J. M. Contamine, V.S., Belgium.

M. Contamine enters into a long account of the different authors who have written on twisting of the uterus, by some described as torsion of the neck of the uterus, and he has also something to say on the priority of the best mode of treatment to be adopted in these cases, which are common in the bovine species, though very rare in the equine; disputes having arisen amongst veterinary celebrities, in claiming for their countries the first description of twisting of the uterus. If the first description has been contested with so much animosity, there is a strong reason why the Belgian veterinary surgeons should claim for one of their colleagues the honour of having first discovered the best mode of treatment to remedy this accident. In fact no journal, anterior to 1852, appears to have described the simple method for the treatment of twisting of the uterus, which appeared in the *Annals of Veterinary Medicine* of that year, p. 451. M. Tyvaert, veterinary surgeon at Couckelaere, gave advice to roll the animal for five or six minutes, principally on the opposite side to the torsion, ascertaining at every turn the position of the vagina. From that time no author (with the exception of M. Elsen, sen., of Vilvorde; M. Fisher, the distinguished veterinary surgeon of Luxemburg, and M. Legrand de Gozée, in Hainault) has mentioned the name of our colleague. On the contrary, a great number of veterinary practitioners would seem to have been very ingenious in finding curative means for twisting of the uterus, some of which are very complicated and frequently hasten death, while they endeavour to bury in oblivion the simple method of our colleague, which is very rarely unsuccessful. For my part, says

the author, I have always found that rolling the patient either in the direction of the torsion, or the reverse, as recommended by M. Bouley, led to delivery taking place without difficulty, and I have had no inconsiderable number of cases.

Case 1st.—On the 27th of April last I was sent for at two p.m. to attend a cow, two years and six months old, of Dutch breed. I was informed by the messenger that the cow was at term, and had shown some symptoms of parturition on the previous evening—in other words some pains—but at long intervals. Since midnight she had made violent expulsive efforts. On introducing his hand into the passage had, to his great surprise, found it hermetically closed. On my arrival I found the animal lying on her right side, with the back against a large flagstone which served as a partition in the shed. Her legs were extended, and the feet were pressing against the wall of the opposite side. She was making extraordinary expulsive efforts; the body was covered with perspiration. I learned also from the attendants that the animal was unable to stand up long, that she mostly remained down in the position indicated, and that the waters had not come away. After having made her get up, I found that the vagina was strangely twisted, and that the superior parts of it, with the terminal portion of the rectum, were drawn inwards—a symptom which I deem pathognomonic of twisting of the body of the uterus. Thus I did not hesitate to declare to the proprietor that I had to deal with a case of torsion, of which diagnosis I soon acquired the certainty on introducing my hand into the vagina. I had scarcely reached the middle of the passage before I met with an obstacle formed by a multiplicity of folds of the organ arranged in spiral manner and having a funnel shape, of which the cup was formed by the posterior end. This configuration is easily explained by the traction of the gravid uterus in an anterior direction, by which the vagina becomes twisted in the middle and not in the least towards the vulva. Finding that I had before me a case of complete torsion, I did not hesitate to cast the animal (in the shed, which was very spacious) on her left side, the disposition of the folds indicating that the torsion was from right to left. Having rolled the patient completely over, I introduced the hand, and found that I could reach beyond the obstruction by following a passage in the form of a corkscrew. A second turn-over of the patient proved, on the reintroduction of the hand, that the passage was completely free, and that there were no more folds. I then thought that parturition would be performed without difficulty, as had been the case each time I had had to deal with similar accidents; but my sur-

prise was great when, on again exploring the parts, I found that I could hardly introduce my finger into the os uteri, though the patient still continually strained. I recollected, however, that M. Tyvaert, in his report on the mode of treatment, had stated that he had sometimes been obliged to recast the animal, which he had allowed to get up, in order that better assistance might be afforded in the delivery, and that to his great surprise he had found the uterus had assumed a similar torsion to that of the vagina.

About ten a.m., before leaving, I again explored the vagina, and found that although the torsion was not reproduced, the os uteri was not any more dilated. At my visit at night I was informed that the straining had been much less. The next day the animal fed with a good appetite, and ruminated as usual; the expulsive efforts took place only at long intervals. I contented myself by ordering a suitable diet, and left orders to be sent for if anything extraordinary occurred, and above all not to introduce the hand into the vagina, until the waters had come away, which is too much the practice of cowmen. I saw the patient from day to day until the 1st of May, without anything remarkable occurring. On the 2nd of May the proprietor said that he believed the calf was dead, which was corroborated by a Flemish farmer. Notwithstanding, by exploring the right flank I detected a living fœtus. An exploration by the vulva also showed that there was no longer any torsion, still the opening of the os uteri remained the same as on the first day. As the animal fed well, the treatment was continued. On the 3rd of May, on my arrival I was informed that the cow had calved during the night without difficulty, and that the fœtal membranes had come away nearly at the same time. The lacteal secretion had commenced, and the state of the patient was satisfactory. On the 6th of May the patient was discharged and put on her usual diet.

The second case occurred on May 28th. I was sent for about eight a.m. by a farmer. The messenger was the person who generally attended to the calving of the cows. He informed me that he had several times introduced his hand into the passage, but that he had found it closed by an object like a twist.

The cow was of native breed, five years old, of large size, and gone in calf nine months and fifteen days. There had been prolapsus of the vagina, dating from the fourth month of gestation, which had, however, disappeared suddenly at the sixth month. The vulva and anus of this cow had retracted within the pelvic cavity to a considerable ex-

tent. Having introduced the hand into the vagina, I found that its membrane formed a great many folds, some of considerable size, which seemed twisted together like a cord, leaving two small openings, one superior on the right side, the other inferior, situated to the left. These appearances enabled me to diagnose a torsion of the body of the uterus from left to right. I ordered the cow to be laid on a straw bed, which had an inclined surface. She was cast on her right side, care being taken to place the anterior part on the upper part of the incline, so as to enable the uterine mass to recede towards the pelvis, thus favouring the relaxation of the twisted parts, and facilitating the introduction of the hand. After rolling the patient, first from right to left, no difference was perceived in the torsion; and, on a second turn being made in the same direction, I found it impossible to introduce the finger into the superior opening, which I had done easily before. Finding that the twist was tightening, I commenced turning the patient the reverse way, and on the third turn I found that I was enabled to introduce the hand into the superior opening, as far as the pelvic cavity, by turning the arm in a manner as if to follow the letter S, if I may so express myself. Hardly had the fourth turn been effected when the vagina protruded like a ball the size of a man's head. This was caused by the receding of the uterus consequent on the relaxation of the ligaments and the position of the body, which I found necessary to change in an opposite direction. I was now convinced that the twist was removed, and that the calf presented itself at the entrance of the pelvis on its back, with the head and limbs doubled up in the superior portion of the uterine cavity on the right side. I raised the posterior part of the body of the animal, in order to return the vagina, and, notwithstanding the expulsive efforts, I succeeded in pushing the calf back to the left side, which enabled me to seize first the ears and afterwards the head, which was secured by fastening a cord on the under jaw, with a sliding knot. The limbs were also straightened and cords fastened to them, which were entrusted to the assistants with directions to pull only when ordered. The vagina was now pushed back as much as possible, while I ordered a slight traction to be made, in order to get the head and the legs of the calf into the passage. Having effected this, and pushing the vulva on each side, and ordering a stronger traction, the calf came away without difficulty. The fœtal membranes having come away before I left, I ordered a decoction of linseed to be injected into the uterus. On the 30th the secretion of milk was fully established, and the patient was finally discharged on the 2nd of June.—*Annales de Méd. Vétérin.*

ROYAL COLLEGE OF VETERINARY SURGEONS.

REPORT OF PROCEEDINGS AT THE QUARTERLY MEETING, HELD OCTOBER 5TH, 1870.

JOHN WILKINSON, Esq., President, in the Chair.

PRESENT: — Professors Spooner, Simonds, and Assistant-Professor Pritchard; Messrs. Hunt, Fleming, Greaves, A. Lawson, Harpley, Moon, Withers, J. C. Broad, Broad, Silvester, Naylor, Gowing, Pritchard, Cartledge, Cartwright, and Coates.

The Secretary first read the notice convening the meeting.

The minutes of the last meeting were then read and confirmed.

The Secretary next announced that—'Clayter's Cattle Doctor,' and the 'Veterinarian's Pocket Remembrancer,' had been presented to the Library by *Mr. Armatage*.

A vote of thanks to Mr Armatage was moved by *Mr. Greaves*, seconded by *Mr. Gowing*, and agreed to.

A letter was read from Professor Lister, of Edinburgh, acknowledging the letter of condolence to the family of the late Professor Syme.

A letter was read from Professor M'Call, acknowledging, with thanks, the assent of the Council to the examination of the students of the Glasgow school being held in Glasgow.

Mr. Greaves moved the election of Dr. Turner, the Professor of Anatomy in the University of Edinburgh, as the successor to Professor Syme to the Scotch section of the Board of examiners.

Mr. Fleming seconded the motion.

Professor Spooner wished to know if it was intended that Dr. Turner should succeed Professor Syme as chairman of the Scotch section, because he understood that Professor Syme took no active part in the examinations.

Mr. Cartledge said he presumed that the election was simply to fill up a vacancy in the number of the members of the Scotch board, and it did not follow that Dr. Turner would be the chairman of the board. Professor Syme had certainly taken a very active part in the general business of the board.

The President said that he himself had heard Professor Syme examine students in Edinburgh, and he was fully employed during the whole time the examinations lasted. It could not for a moment be contemplated that the chairman of the board was not to be an active member of it. Dr.

Turner had a very high reputation, and appeared perfectly eligible. There was only one little matter connected with his appointment to which any objection could be taken, but the difficulty could be easily surmounted. He was at present a member of the examining board of the Highland and Agricultural Society of Scotland, but he (the President) thought he was quite justified in stating that Dr. Turner would accept the appointment to the Scotch section if elected.

Professor Spooner: Are we to understand that if elected he will still retain his position at the other board?

The President: Certainly not.

Professor Spooner: He will accept our election and retire from the other.

The President: Yes.

A ballot being taken Dr. Turner was unanimously elected.

A letter was read from Deputy-Professor Pritchard, enclosing copy of the report of the Professors to the Governors of the Royal Veterinary College with the resolutions arrived at upon that report.

The report and the resolutions were read.

Mr. Greaves said, in many respects the report had his entire approbation. The Scotch colleges desired to enter into a covenant with the London college so as to prevent any one college taking the rejected students of another. This difficulty would be got over by the suggestion of the Governors of the London College that an understanding should be come to with the other colleges upon the subject. The suggestion that the examinations at the three colleges should be as near alike as possible would doubtless meet with the approval of Glasgow and Edinburgh Colleges.

Mr. Fleming wished to know if any progress had been made with regard to the compact or understanding that the three schools should act in harmony so far as the examinations went. In the report of the Professors to the Governors there appeared to be an attempt to disown or ignore the efforts made by the Royal College of Veterinary Surgeons to bring about this understanding between the schools. They seemed to think that the Royal College of Veterinary Surgeons ought to have no influence in the matter. He should like to know if the signataries to that report had forgotten that the Royal College of Veterinary Surgeons had exerted itself very much to bring about the result which had been sought to be attained.

The President said he could give no information upon the subject. When he read the communication from the Governors it appeared to him that the duties of the Royal

College of Veterinary Surgeons with regard to the matriculation examinations were at an end. When the subject was first mooted he was under the impression that the London College was anxious to avail itself of the services of the Council as a medium to act between the three schools, in order that uniformity of examination might be carried out under an authority that would be independent of the schools without interfering with them in any manner whatever. No member of the Council either directly or indirectly wished to have any control over the interior economy of the Royal Veterinary College. At the same time, he thought from what had taken place originally that the Council would be expected to give their neutral assistance in carrying out the project. The governors of the Royal Veterinary College, however, now stated that they did not wish the Council to interfere, and, therefore, he thought the function of the Council was at an end.

The following letters were then read:

(1) From Professor Williams, dated August the 2nd, 1870, enclosing the form of an agreement proposed by the Edinburgh College, and agreed to by the Glasgow, but declined by the London College.

(2) From Professor M'Call, dated the 1st of August, 1870, expressing his regret at the position the Royal Veterinary College had taken up, and stating that he had resolved to carry out the suggestions made by the Council in their report of the 15th of June last, with this reservation, that the test, as formerly, would be applied by himself and others connected with the Institution.

Mr. Broad proposed that these communications should be entered on the minutes.

Mr. Greaves seconded the motion. He said that the Scotch colleges had been very anxious that the examining board for the matriculation examination should be appointed by the Council of the Royal College of Veterinary Surgeons, and the Council were pretty unanimous in their opinion that such an arrangement would be the best. The Governors, however, of the Royal Veterinary College did not approve of that scheme, and preferred what was, at all events, the next best mode—the proposal which had just been listened to. He hoped the Edinburgh and Glasgow Colleges would see it to be their duty to have their students examined by the High School of Edinburgh and Glasgow respectively; the principal of the High School at Glasgow was quite willing to undertake the duty, as was also the principal of the Edinburgh High School. If the Scotch Schools adopted the plan of having

their students examined by the professors at each of the High Schools, while the Royal Veterinary College students were examined by the College of Preceptors, the Council might be satisfied with the arrangement.

Prof. Spooner said the examinations at the Royal Veterinary College this session had been conducted by the College of Preceptors, and the results, so far as they had at present gone, had been most satisfactory. There had been four or five rejections, and without rejections one would scarcely presume that the examinations were conducted with a sufficient degree of stringency. He hoped that ere long the stringency of the examinations would be increased, and he thought that the time had nearly arrived when the pupils ought to give evidence of a knowledge of classics as well as of the ordinary subjects upon which they were now examined. The Governor of the Royal Veterinary College, however, declined to enter into any special engagement with either of the other colleges except on one point—with reference to the subsequent examinations of rejected pupils. They were quite willing to agree that no pupils who had been rejected by the Glasgow or Edinburgh College, should be examined at the London College until the lapse of at least six months; they even thought that it would be perhaps most advisable to have a longer interval.

Mr. Greaves said that Professor Williams at the commencement of this session had instituted a preliminary examination of his pupils, but he had no doubt when both the Scotch Colleges knew exactly what the London College proposed, they would consent to it.

Mr. Naylor said the best plan would be to have the questions proposed by a body agreed upon by the three colleges, and papers sent to the different schools. After the students had written their answers, these papers could be sent back for examination to the body which proposed the questions. This plan was adopted by the syndicate of Cambridge and the Pharmaceutical Society, and would be found to ensure uniformity in the examinations, which could not be expected with three Examining Boards.

The President said he thought it was the duty of the Council to see that the examination as to the education of the pupil was properly carried out. He did not deny that the gentlemen who examined the pupils were persons of high honour and trustworthy to the utmost degree, but, at the same time, it would have been better if the Royal College of Veterinary Surgeons had been entrusted with the management, in order that each school might have a court of appeal,

if necessary, as a protection. It was quite evident from the letters that had been read that there was a vast difference of opinion between the three schools, and that difference would never have arisen if the management had been left in the hands of the Council. At present, it appeared to him that the Council had no further business in the matter. If they had no power they ought to have no word in it; and he considered they had failed in their attempt to bring about what he regarded as an absolute necessity—the formation of a perfectly independent board. He wished to have an expression of the Council's opinion as to whether or not the duties of the Council in connection with the preliminary examination were at an end.

Mr. Greaves: I for one should be exceedingly sorry if this question, after arriving just at the point of being satisfactorily settled, should be taken off our hands. I wish to assure you that the principal of the Glasgow College will institute an examination, to be conducted by the High School, as soon as he knows that Professor Spooner is willing to send a list of the rejected students.

Professor Spooner: He has been furnished with a similar communication to that which was addressed to this Council.

Mr. Greaves: I shall see the Professors at Edinburgh on the 26th, and I feel assured that they will agree to have their examinations conducted by the High School.

The motion for placing the correspondence on the minutes was then agreed to.

The subject of the practical examination was entered upon.

The following letters were next read:—(1) From Professor Williams, (2) from Professor M'Call, stating that every assistance would be given to the examiners in carrying out the practical examination.

The Secretary next read the report of the Practical Examination Inquiry Committee on the mode of conducting the practical examinations.

REPORT OF THE PRACTICAL EXAMINATION INQUIRY COMMITTEE.

In continuation of the proceedings of the Examination Inquiry Committee, the members have further to report that they met on the 9th of August, 1870, and having ascertained, by reference to the previous proceedings, that the

Council had notified to the several schools that a practical examination would be instituted in the year 1871, devoted their attention to

First. As to whether any directions could be laid down for the guidance of the examiners, by detailing the subjects which might be considered to come under the following classification, namely—Clinical, Technical, Manipulatory, and Operative Surgery.

The members were duly impressed with the importance of the subject, but after having discussed the various salient points thereof, they came to the conclusion that it would not be desirable to interfere with the independence or discretion of the Examiners.

Secondly. The place where the practical examination could be carried on became the second subject for deliberation, and the Committee has to report that in its opinion it rests with the Council to determine whether it would be desirable to seek the assistance of the authorities of the Royal Veterinary College in respect to their permitting the examinations to be carried on within the walls of the College, and in the event of the Council deciding in the affirmative, it would, no doubt, take the necessary means of ascertaining whether the said authorities are disposed to render the required assistance.

The several members of the Committee entered zealously into this subject, and expressed their full confidence in the belief that there would be no difficulty in providing suitable premises elsewhere in the event of failure in respect to the application which they presume will be made to the authorities of the Royal Veterinary College. The Committee further resolved to give its attention to ascertaining what premises would be available and which of them would be best suited to the purpose.

The Committee then adjourned.

On the reassembling of the Committee on September 13th, the following subjects were taken into consideration, viz.:

Firstly. The time at which the ensuing practical examination should be held.

The Committee, after weighing the matter in all its various bearings, resolved to submit for the favorable consideration of the Council that the practical examination should be held on the day preceding that of the final, or pass examination.

Secondly. The appropriate remuneration which should be awarded to the examiners who would be called upon to perform the duty.

The Committee is desirous of submitting the following

proposition to the Council, namely—that having due regard to economy, and having no way at present of recouping the amount of the necessary expenditure, the sum of three guineas be paid to each examiner; and the Committee would further suggest that two examiners for the horse section and two for that of cattle, &c., will be sufficient, which will involve an expenditure of a sum of "twenty-four guineas."

Thirdly. The providing of suitable premises and subjects for the examination and the expenses incidental thereto.

On this portion of the scheme the Committee has to state that, although the selection of premises and subjects does not present any insurmountable difficulty, the means for doing so have not been sufficiently matured, and that more time is required for inquiry.

Fourthly. The preliminary arrangements which it is desirable to make with the several schools.

On this head the Committee desires to say that there is every reason to believe that the utmost facility will be afforded for carrying out the scheme in Scotland; and although the Committee has not had the honour of receiving any communication from the Governors of the Royal Veterinary College, in reply to one which was addressed to them dated April 28th, the Committee nevertheless feels sanguine that, if courteously appealed to, the Governors will afford to the Council their valuable aid. The Committee begs to leave to the Council the decision as to the best mode of procedure in this matter.

In conclusion, the Committee has the honour to submit for the approval of the Council a modified form of the record of the results of the examination, which is rendered necessary by the additions which have been made to the sections of the examinations. (Signed) G. Fleming.

Professor Simonds moved that the report be received.

Mr. Gowing seconded the motion, which was agreed to.

The Council then proceeded to consider the various clauses of the report *seriatim*.

(1) As to whether any directions should be laid down for the guidance of examiners. The Committee, having come to the conclusion that it would not be desirable to interfere with the independence or discretion of the examiners, *Mr. Greaves* thought it was best that the examiners in this branch of the examination should be left as free as those in anatomy or chemistry, though at first he thought the better plan would be to lay down a certain line for the examiners to be guided by.

The clause and recommendation of the Committee was agreed to.

(2) The place where the practical examination should be carried on. The Committee reported that it would rest with the Council to determine whether it would be desirable to seek the assistance of the authorities of the Royal Veterinary College in respect to their permitting the examinations to be carried on within the walls of the College, and that in the event of the Council deciding in the affirmative, it would no doubt give the necessary instruction, with a view to ascertaining whether the said authorities were disposed to render that assistance. The Committee expressed a belief that no difficulty would be experienced in obtaining suitable premises elsewhere if the application to the Royal Veterinary College failed.

The President said he had been to Scotland since the last meeting of the Council, and from what the authorities there had told him he believed they would find no difficulty about premises or subjects. The only reply received from the Royal Veterinary College was a letter acknowledging the receipt of the communication from the Council of the Royal College of Veterinary Surgeons.

Professor Simonds: I think, in order to put this matter in its proper position, it will be right for the three letters, instead of the two previously referred to, to be entered on our minutes, so that at our next meeting the matter can be considered in its entirety.

(3) The time at which the practical examination should be held. The Committee recommendeded that the practical examination should be held on the day preceding that of the pass examination.

The President: This proposition means that the examiners who are required to perform this part of the duty will have to appear for the examinations the day before the pass examinations begin. They will then examine twelve applicants, and in the early part of the succeeding day twelve more, and so on. It will be an arduous duty for those examiners to have to institute, as it were, two examinations each day; but the Committee could not see their way to any other arrangement which would be satisfactory. By this plan the pupils will not be expected to undergo two examinations on one day, but will have time for consideration from the middle of one day to the evening of the next.

Mr. Pritchard: I should see no difficulty in undertaking the examination the day before.

Mr. Cartledge thought the suggestion a satisfactory one.

Professor Simonds: Is it to be understood that the Council is to decide whether a pupil rejected upon the practical examination is eligible for the final examination?

The President: It will come in with the main examination.

The recommendation was agreed to.

(4) Remuneration to the examiners. The Committee had recommended that three guineas should be paid to the gentlemen who conducted the practical examinations. Two examiners for the horse section and two for the cattle section would be sufficient.

The President thought the College could not at present afford to pay three guineas a day to the practical examiners. He trusted that the examiners would favour the Council with their services free after the first day, for the first year. Another year steps may be taken for replenishing the funds thus expended by the Council.

Mr. Cartledge said that, under this arrangement, as the Scotch section would have to devote one extra day to Edinburgh and one to Glasgow, he should have to be away from home perhaps eight days.

Mr. Greaves thought Mr. Cartledge was justified in complaining of the long time he would be away from home. He thought the practical examination had better be on the same day as the final, or pass examination. When candidates pay ten guineas instead of seven, the Council would be better able to pay their examiners, and he hoped that they would meanwhile not be too exacting.

The President considered that it would be a great hardship upon the pupils to require them to undergo two examinations in one day.

Mr. Hunt: Under the understanding that the amount of remuneration will be taken into consideration another year, I beg to propose that thirty-six guineas extra be voted as a remuneration to the examiners who conduct the practical examination for 1871.

Mr. Broad seconded the motion.

The resolution was carried unanimously.

(5) The providing suitable premises and subjects, and the expenses incidental thereto. The Committee reported that although the selection of premises and subjects presented no insurmountable difficulty, the means had not been sufficiently considered, and more time was required for inquiry.

Mr. Gowing: When you have the reply from the London College you may be in a different position.

The consideration of this clause therefore stood over.

(6) The preliminary arrangements which it is desirable

to make with the several schools. The Committee left to the Council the decision as to the best mode of procedure in this matter.

The President: In the event of an adverse reply being received from the Governors of the London College between this and the next meeting of the Council, it will be almost necessary to call a special meeting.

Professor Simonds: The Council might empower the Committee to deal with any reply which it receives.

Mr. Naylor: I think it is quite in the power of the Committee to attend to that.

Mr. Gowing: Do I understand that it will be left to the Committee to find suitable premises?

Professor Simonds: They must make every inquiry with regard to expense, &c., and then bring up their report.

Form of the Record of Examination.

The President: It is proposed that the examiners who conduct the practical part of the examination relating to the horse and cattle respectively shall fill up columns in the examination form in the same way as is now done with regard to chemistry, pathology, &c.

It was then agreed to amend the *Form* now in use by the Court of Examiners so as to meet this necessity.

The Registrar read the list of deaths reported during the past quarter. These included the name of Professor Miller, one of the members of the Court of Examiners.

Professor Simonds: The list which we have just been listening to appears to be a very heavy one, and certainly its mournfulness is considerably added to by recording the death of Professor Miller. I only express the feelings of every gentleman around this Board when I say that we have received this announcement with very great regret. In the capacity of one of our examiners, he has so conducted his examination as to win not only the respect of his colleagues, but also the respect of those whom he examined. I do not think there is a single member who has entered the profession since Dr. Miller became an examiner who did not regard him as a friend. Under these melancholy circumstances, I would suggest that we send a letter of condolence to the family of Professor Miller, and express, in as sympathising language as we possibly can, our deep regret at their bereavement.

Assistant-Professor Pritchard seconded the motion, which was unanimously agreed to.

The President: At the next meeting of the Council it will be desirable that a successor to Dr. Miller be appointed.

On the subject of the reprint of the Register, it was decided that the publication of the new Register be deferred until after the April examination.

The President next announced that he had received a letter from Mr. Robertson, of Kelso, stating that he had been requested by the authorities at the Edinburgh School to give a course of lectures on anatomy. No doubt this was with a view to his ultimately becoming a permanent teacher. He wished to know whether, in the event of Mr. Robertson undertaking to deliver the lectures in the ensuing session, it would be desirable that he should resign his appointment as an examiner? Perhaps the best plan would be to request him to suspend his duties as an examiner for next year, or until a further development of the case took place, so that in the event of his not becoming a permanent teacher at Edinburgh, the College might not lose his valuable services as an examiner. This plan would reduce the number of examiners *pro tem.*, but no doubt the remaining members of the Board would be able to carry on the examinations in Scotland for one season in a satisfactory manner.

Professor Simonds thought it better to fill up the vacancy at once if Mr. Robertson was about to become a teacher; but if he was only going to deliver an experimental course of lectures, the Council ought not to take any notice of it.

The President: He could not examine his own pupils.

It was decided not to ask Mr. Robertson to send in his resignation at present; but to send down another examiner at the close of the session during which Mr. Robertson had delivered his lectures, and that if he became a permanent teacher at Edinburgh to appoint another examiner in his place.

Report of Finance Committee.

From this report it appeared that the present liabilities amounted to £70 11s. 8d., which the Committee recommended should be discharged.

A motion for receiving and adopting the report was moved by *Mr. Gowing*, seconded by *Mr. Lawson*, and agreed to.

Exemption from Juries.

The President said all his efforts had failed in obtaining a clause in the Juries Bill for the exemption of veterinary surgeons. He had reason to believe that if the authorities had been applied to at an earlier period the wishes of the Council would have been acceded to; but when he (the President) first heard of the matter, the bill had passed the House of Commons, and was down for second reading in the Lords. Some earlier notice ought to have been given to him as to the progress of the bill.

The Central Veterinary Medical Association.

A letter was read from Mr. Armatage (Secretary to the Central Veterinary Medical Association), stating that a resolution had been passed, thanking the Council for the use of their Board room.

Another letter was read from the same gentleman, asking the Council to allow the use of the room for the meetings of the Association during the ensuing twelve months, they undertaking to pay the expenses incurred.

The Secretary said the days which had been selected for holding the meetings were those immediately preceding the days on which the Council would meet, and it would be impossible for him to properly prepare for the Council meetings if the room was occupied on the preceding days.

The President said the object the Association had in view was to secure the attendance of those members of the Council who were also members of the Association, and who resided in the country.

Mr. Naylor proposed that the Board room should be placed at the disposal of the Association on the days next succeeding the quarterly meetings of the Council.

Mr. Lawson seconded the motion, which was agreed to.

Mr. Gowing, as a member of the Association, thanked the Council for the concession.

It was next resolved that the December examinations should be held in the week preceding Christmas Day.

It was ordered that cheques should be drawn for the examiners' fees and the insurances due at Christmas.

The proceedings then terminated.

ROYAL VETERINARY COLLEGE.

THE following gentlemen have been selected, upon a competitive examination, to officiate as Monitors during this, the closing session of their studies:

Mr. J. A. Taylor	Manchester.
„ D. H. Tombs	Great Barrington, Gloucester.
„ F. Willows	Stallinborough, Lincoln.
„ C. W. Gillard	Stafford.
„ F. G. Samson	Mitcham, Surrey.
„ T. H. Simcocks	Drogheda.
„ A. R. Williams	Tavistock.
„ J. Mead	Eaton Bray, Dunstable.

MATRICULATION EXAMINATION.

List of gentlemen admitted as pupils at the Royal Veterinary College, after having undergone the matriculation examination conducted by a Committee of the College of Preceptors, presided over by Dr. G. A. Jacob, Dean of the College. Six others were rejected.

Mr. M. F. Green	Corbally, Co. Clare.
„ J. Roffey	Beaufort Villas, Streatham.
„ H. Jarvis	Burwash, Sussex.
„ S. Beeson	Chalfont St. Peter's.
„ T. Briggs	Bury, Lancashire.
„ R. Jefferies	Bolton.
„ C. Challoner	Pendlebury, Lancashire.
„ S. Longhurst	Farnham, Surrey.
„ C. Stewart	41, Little Moorfields, London.
„ P. Aris	Uckfield, Sussex.
„ G. Martin	Lincoln.
„ M. Baker	Holt, Norfolk.
„ E. Wiltshire	Hanley Castle, Upton-on-Severn.
„ S. Wiltshire	Ditto ditto
„ S. H. Perry	Ibstock, Leicestershire.
„ H. Clark	Saltash, Cornwall.
„ H. Collett	West Bromwich.
„ S. Dyer	Brails, Warwick,
„ W. R. Shirley	Twickenham.
„ E. Knott	Portsmouth.
„ C. J. Hills	Leamington.
„ C. E. Odger	Manchester.

Mr. J. Johnson	Bishop Auckland, Durham.
„ R. A. Turnbull	33, St. George's Road, S.W.
„ J. D. Adams	Cork.
„ T. W. Jordan	Chard Sutton, Kent.
„ J. H. Brown	Louth.
„ J. Murphy	Kilcray, Co. Cork.
„ A. S. Bradley	Dudley.
„ B. Wood	Stafford.
„ W. E. Martin.	Bishop's Stortford.
„ W. Hutchinson	Great Eccleston, Lancashire.
„ W. M. Tegg	Stamford Hill, London.
„ W. H. Hind	Brocdish, Norfolk.
„ W. J. Arkcoll	Leek, Stafford.
„ C. Middlehurst	Liverpool.
„ Capt. R. Russell	Swanscombe, Kent.
„ F. Farrance	Staplehurst.
„ A. J. Leaney	Tisbury, Wilts.
„ A. J. Cayless	Loughborough.
„ J. Williams	Llanbaddock.
„ W. Hamilton	404, Oxford Street.
„ A. Waters	Cambridge
„ C. W. Emms	Ilminster, Somerset.
„ J. Burton	Penton, South Devon.
„ T. Bartlett	Torquay.
„ G. Vessey	Witham-on-the-Hill, Lincolnshire.
„ E. Dwyer	Cambridge House, Aldershot.
„ C. Alcock	Ulceby, Lincolnshire.
„ T. Kilby	Martin St. Lawrence, Northamptonshire.
„ W. Roots	14, Winchester Street, London.
„ C. Tozer	56, Newman Street, London.
„ D. B. Bennett	Harrogate.
„ J. Cammack	Great College Street, London.
„ R. Hudson	Retford.
„ W. Johnson	Waterford.

The following gentlemen have also been admitted as students on the production of satisfactory certificates:

James Ellis, M.D.	Blackheath, Greenwich.
Capt. J. Brown	Plymouth.
Mr. H. J. Hancock	Uxbridge.
„ J. Litt	Shrewsbury.
„ J. W. Secker	Knaresborough.
„ V. Stockley	Brighton.

CENTRAL VETERINARY MEDICAL SOCIETY.

WEDNESDAY, *July 28th*, 1870,

Mr. GEORGE FLEMING, F.R.G.S., F.A.S.L., M.R.C.V.S., Royal Engineers, in the Chair.

THE Meeting assembled in the Board Room of the Royal College of Veterinary Surgeons, 10, Red Lion Square, which had been again kindly granted for the occasion by the President and Council.

After the minutes of the previous meetings were read and signed, and various letters considered, the Report of the Sub-Committee was read by the Secretary as follows:

"Report of the Sub-Committee appointed by the Central Veterinary Medical Society, at a Meeting held on Monday, July 11th, for the purpose of considering, under instructions sent down from that meeting, certain propositions relative to the constitution and government of the Society.

"To the Provisional General Committee.

"GENTLEMEN,—

"We the undersigned, appointed by you a Sub-Committee for the purpose of carrying out your instructions, as conveyed in resolutions passed July 11th, have to report that, in accordance with the summons of the Secretary, we met in the Board Room of the Royal College of Veterinary Surgeons, 10, Red Lion Square (again kindly placed at our disposal by the President of the College), and gave earnest attention to the propositions laid before us.

"The propriety of having two classes of members being duly considered, we have to state that, in our belief, this is an important element in the constitution of the Central Veterinary Medical Society, and we have accordingly provided for the admission of members from all parts of the kingdom, and even foreign countries. In the first category we have placed the members as resident and non-resident, the former comprising gentlemen residing within the London Postal District; and the latter, those living without limit beyond such district. In the second category we desire to place honorary members, British subjects and Foreigners who have rendered themselves famous by their contributions to medical science. The power of conferring such degree we propose to invest in the Council on sufficient recommendation, and on no account to be conferred at any time on more than twenty British subjects and the like number of Foreigners. All members, we propose, shall be known and recognised as "Fellows" and "Honorary Fellows," and to the latter the Society shall award its diploma on admission.

"Your Sub-Committee having in view the probable extension of the Society, and desiring to render its aim and object at the outset as comprehensive and efficient as possible, have made what appeared

to them a suitable provision for the creation of a body that will minister greatly to the future standing and power of the profession throughout the United Kingdom. Up to the present time the profession has experienced little or nothing of the operation of those inherent powers that characterise scientific or learned bodies. As one of such, it has not attracted that attention from the public and the Government as we—the Committee—are inclined to think it deserves, and, while admitting its shortcomings as a young and growing profession, we are hopeful that in the establishment and operations of the Central Veterinary Medical Society, means will be opened out by which that intercommunication of its members, mutual associations and exchange of ideas so desirable among men of science, will be facilitated and encouraged, and culminate in an ascendancy not to be attained by any other. As a metropolitan society, we delegate to it superior powers. We accredit it with an area of action unattainable by other societies scattered over the land, and hopefully associate with it a work which, successfully carried out, belongs only to it. We desire to see in it the representative mind and talent of the profession, and, by united endeavours, to make it the means of deciding upon important facts, and disseminating information of a standard character to its members, and thus minister to a tone that will call forth that public notice, the want of which has proved no little hindrance to true progress and advancement.

"The results of our deliberations are presented in the form of a code of bye-laws and regulations, as the means by which we desire to see our hopes realised. These, under various heads, deal with the enactments which require to be observed in the formation and government of a society, its constitution, area, and powers of action.

"In the admission of members we have imposed conditions of certain stringency, and limit the honour to those only who possess the diploma of the Royal College of Veterinary Surgeons.

"In our anticipations of the future extension and offices of the Society, we have provided for the probable issue of its 'Transactions' at periods to be determined upon. The establishment of a library and museum for the use of the fellows will also, it is hoped, be events in the order of time, and at no distant date.

"Keeping in view the present requirements of the profession, we are sanguine that our anticipations of what may be reached are neither too high nor difficult. We have great faith in attaining an object by unity of thought and combined action that is not possible by isolation and separate powers; and we propose to collect the scattered elements, compress them into individual space, and utilise them in a common cause."

The bye-laws and regulations, forming the remaining part of the report, were also read, and after some remarks from the chairman, the whole was unanimously received and adopted.

The meeting then proceeded to the election of officers.

[For the names of the Office-bearers see *Veterinarian*, p. 709.]

The following gentlemen were next elected Fellows of the

Society :—Professor Williams, Edinburgh ; J. Broad, Paddington ; E. Woodger, Paddington.

The Secretary was desired to procure the necessary books and stationery, and make suitable arrangements for the holding of the meetings of the Society. In the latter it was thought desirable to seek permission from the President and Council of the Royal College of Veterinary Surgeons to use their board room during the ensuing twelve months, the Society agreeing to the payment of expenses. The Secretary was therefore authorised to write to Mr. W. H. Coates on the subject, requesting him to lay the letter before the Council at their next meeting.

The first ordinary general meeting of the Society was appointed to be held on Tuesday, the 4th of October next, at seven o'clock in the evening, and subsequent meetings on the first Tuesdays in January, March, and May.

Resident fellows are required to pay, on admission, an entrance fee of two guineas, and a contribution of one guinea annually. Non-resident fellows to pay on admission as entrance fee one guinea, and an annual contribution of half a guinea.

Forms of application for fellowship—to be obtained from the Secretary—signed by three fellows, must be sent by candidates to the Secretary before the next meeting, that the requisite notice may be given.

Each fellow has the privilege of introducing a visitor to the meeting, whose name must be entered in the visitor's book, as well as intimated to the President.

A vote of thanks having been proposed to the President and Council of the Royal College of Veterinary Surgeons for the use of their board room, and carried by acclamation, and also to the President of the Society, the meeting separated.

GEORGE ARMATAGE, M.R.C.V.S., *Secretary*.

TUESDAY, *October 4th*, 1870.

The First Ordinary General Meeting of the Society was held in the rooms, 15, Lower Seymour Street, Portman Square, in the evening of the above day, the President, George Fleming, Esq., F.R.G.S., F.A.S.L., M.R.C.V.S., &c., in the chair. The meeting was numerously attended, about sixty gentlemen, including Fellows and Visitors, being present. Among the latter were Professors Tuson and Pritchard, and Mr. J. W. Axe, Royal Veterinary College. Messrs. Thos. Greaves, Manchester ; A. Lawson, Bolton ; Thos. D. Broad, Bath ; James McKenney, Dublin ; F. Mavor ; J. Moore, Sen. ; T. Moore ; H. Lawrence, Romford ; M. Green ; F. Colley, and several others.

The Secretary first read the announcement of the meeting, and afterwards the following list of candidates for Fellowship, viz., as Resident Fellows : Fred. Thomas Stanley, Montague Street, Borough ; James Hall, Bloomfield Road ; Francis Whitfield Wragg, Church Lane, Whitechapel ; Thomas Hetherington, Edgeware Road, and Charles Hall Martin, High Street, Camden Town. As Non-resident

Fellows: William Bentley, Margate; Henry L. Simpson, Windsor, and Henry Lawrence, Romford, Essex.

The President then proceeded to address the meeting, and in the course of his remarks observed that, in the deliberations of the Council, it had been wisely arranged that the evening of the first meeting should not be occupied by an inaugural address. He had, therefore, but a few remarks to make, and they were of a brief character, for papers had been prepared for reading, on subjects of great importance to the Society and profession, which would claim their attention before anything he might say. They were met to inaugurate the establishment and opening of a CENTRAL VETERINARY MEDICAL SOCIETY, which had been resolved upon by the veterinarians of the metropolis in the most enthusiastic manner, and one of the greatest evidences of the zeal with which the subject was taken up, might be accepted in the large attendance on this occasion. The Society is following in the wake of a large movement which has been going on for some time in the provinces, closely associated with a gentleman whom he was glad to see present (Mr. Greaves, of Manchester), and although probably late in that movement, he (the President) felt that he could discern abundant elements for the widest extension, and most powerful operation of a metropolitan Veterinary Medical Society. It is well known that the position of Veterinary Science is not so high as it should be, nor is it appreciated by others as it deserves, even under all its shortcomings; the position also of the members of the profession is sadly behind the requirements of the age. The Central Veterinary Medical Society will undoubtedly effect an improvement and raise the status of both. It is a notable fact that by rubbing together of minds, however talented, advancement must be made, and the opportunity has now arisen to cultivate this in an eminent degree. It is most probable that the position of the profession as recognised by Government and the various local authorities throughout the kingdom, is to be attributed to the undesirable state of things as now existing. Policemen, butchers, &c., are employed to the exclusion of members of the profession, when they alone should be the competent authorities on all questions relating to the maladies of our domestic animals. They must remember that, as members of the veterinary profession they are scientific men, and as Fellows of the Central Veterinary Medical Society, they are bent on scientific attainments. The objects of the Society are manifold. By promoting the meeting together of the members of the profession, a mutual desire for advancement will be encouraged. They are solicited for their opinions, raised under great care and attention, and there they will be sifted to discover their truth and applicability. The promotion and dissemination of sound doctrines forms an important feature of the Society, and these will be gathered from personal observation, as well as scientific investigation and experiment, when necessary, under committees organised by, and at the expense of the Society. In the examination of conditions, where probabilities are far greater than *bonâ fide* certainties, much difference of opinion necessarily

follows. Each views the objects of his search from a different point of view, and, however widely these opinions may stray, they must not forget that each is entitled to respect. However much we may differ in opinions, it should always be our maxim to render the object subservient to the furtherance of the best interests and aims of the Society, and advancement of the science of veterinary medicine. (Applause.)

Mr. F. J. Mavor read a short but very interesting paper on thermometrical observations on the horse, instituted to ascertain the effects of certain medicaments upon the temperature of the body. The conclusions arrived at by Mr. Mavor in his experiments are as follow:—

The normal temperature of the horse, as taken at the rectum by one of Mr. Hawksley's Fahrenheit's thermometer, is from 99° to 100°. A rise of temperature, more or less, is the product of every disease.

All medicines, whether used subcutaneously, or given by the stomach, produce a corresponding elevation of temperature.

Although a very high temperature may exist as the result of disease, a dose of medicine will produce a higher elevation.

Lastly, the same effects are observable in health as well as disease.

These statements were supported by tabulated records of observations made, with atropine administered subcutaneously to a grey mare suffering from abscess in the pectoral muscles, in which upon every occasion during the existence of the injury, the exhibition of the drug in doses of a quarter of a grain, gave rise to an increase of temperature; and when convalescence had been established, as evidenced by a decline of temperature to the normal standard, the exhibition of the same doses of the drug produced a rise of temperature, which did not subside until the third day.

The Secretary (G. Armatage) observed that the facts, as given by Mr. Mavor, were highly valuable to the veterinarian, inasmuch as the elevation of temperature, caused by medicines given, must not be confounded with the specific heat of certain maladies, and diurnal variations that are found to exist. He had made numerous observations with the thermometer throughout the diseases of the lower animals, and in each case fresh evidence had arisen testifying the inestimable value that instrument is in the *clinique* of veterinary medicine. An elevation of temperature he had found to exist after exercise, and even after food in health when animals had been previously confined; and those allowed to go at large always exhibited a higher range in health than those confined to buildings could indicate, and it is highly important to bear this in mind when judging of the intensity of animal temperature as indicative of disease. His remarks had been published,[1] which those interested could read and test for their accuracy. He could not say he had noticed any particular elevation of temperature after the introduction of medicaments beneath the skin, but he had felt extremely puzzled to find,

[1] 'The Thermometer as an aid to Diagnosis in Veterinary Medicine.' London: H. Kimpton, 82, High Holborn.

in cases of tetanus for instance, that after the use of powerful sedatives, as belladonna and hydrocyanic acid in combination, not the least diminution occurred. In the use of salines his observations agreed with those mentioned by Pereira and others, who state no diminution takes place, although the sense of coldness induced is extreme. The value of the thermometer, as foretelling the progress or decline of disease long before any outward manifestation is exhibited, was dilated upon, and Mr. Armatage concluded by urging attention to Mr. Mavor's observations, as well as to the use of the thermometer generally, as an instrument calculated to throw much light upon the nature and progress of disease, and means of much greater accuracy in diagnosis, not in ordinary diseases only, but those of an occult and contagious character. Many of the tabulated statements of previous observers were said to be totally inaccurate, and, as far as the lower animals are concerned, the veterinarian has an extensive field before him, and facts collected therefrom may prove eminently useful to the medical man in human practice.

Mr. W. Hunting referred to the discrepancies that are known to exist in thermometers from the same maker, two instruments, although said to be correct, registering different degrees in the same animal. He could refer to observations made by individuals in that manner, and which proved delusive and fatal. It is necessary to receive with caution new theories, and the results of few and unconfirmed experiments ; they tend to overthrow the facts and teachings of the past without providing the most proper and reliable substitute for them.

The President then called upon *Mr. W. Hunting* to read his paper on "The Growth and Structure of the Horse's Foot," in which the author endeavoured to show that although convenience requires a division of the hoof into three elements—wall, sole, and frog—anatomy and physiology distinctly indicate that it is a continuous whole, and this totality applies as forcibly to the functions as to the structures of the hoof.

After detailing with great minuteness the structural elements of the foot, Mr. Hunting went on to say that the hoof consists of horn fibres running parallel to each other, and of an agglutinating interfibrous horn. The papillæ or villi, covering the sensitive foot, secrete the horn fibres ; and the surface between the villi secretes the interfibrous horn. The sensitive laminæ not only afford attachment for the wall, but, like the sole, frog, &c., secrete horny matter. The whole sensitive foot is continuous, and must, therefore, produce a continuous hoof. Maceration in water enables us, with the aid of some force, to separate from each other the frog, sole, and wall, but not clearly ; we never can obtain a definite division throughout without the aid of a cutting instrument. Mr. Hunting holds that this partial separation merely shows where destructive forces are most powerful, that the line of division is weaker than other parts. It is weaker merely because there is at such parts a relative want of horn-fibres—an excess of the weaker kind of horn.

The function of the hoof is to protect the sensitive foot, and to

afford a firm basis of support to the animal. Every single part of the hoof acts in unison, and none in independence. The disconnected statements that "the sole will not stand pressure," that "the wall sustains the weight of the horse," or "the heels are the weakest parts of the foot," were said to be founded on narrow views of the functions of the hoof, in opposition to the fact that no one part of the foot can act properly unless other parts preserve their structural and functional integrity. A weak sole allows the wall to collapse; a weak wall allows the sole to become flattened; a small wasted frog offers no obstacle to the contraction of the heels, and overgrown heels destroy first the form, and afterwards the function of the frog. Every element is equally important, and all work together, and are dependent upon each other. Mr. Hunting said he had a strong disbelief in alternate expansion and contraction of the foot during progression. As to the proper bearing surface of the hoof, he believes the border of the wall, and portion of the sole immediately in contact with it, take the primary bearing; the frog is intended to come in contact first with the ground, but then to yield under pressure and allow the sustaining forces to fall on the harder and stronger parts. The bars in their integrity form a kind of internal wall, and prevent undue pressure of the frog. The arch of the sole, though taking a direct bearing on soft ground, merely allows a distribution of pressure through it on hard surfaces, just as pressure is distributed throughout all arches when applied only to the abutments.

The President said Mr. Hunting had gone deeply into the histological composition of the horse's foot; however, some of the statements might be disputed, and, as far as he had studied the subject, found they were at variance with his conclusions. It is difficult to decide what is the type of a perfect foot. In all countries various modifications and configurations are to be found, each in itself being a grand adaptation to the wants of the animal, as well as to external conditions. Thus, in low marshy countries, the indigenous breeds of horses have wide and flat feet. These do not sink so rapidly as small ones, nor so much as a hollow or concave foot. Again, in hot dry countries the foot is narrow, hollow, and hard, as a means of withstanding wear; yet none of these can be taken as a type of the horse's foot generally. Influences of an external nature have the power of modifying the general characters of the hoof, and thus reduce it to one of a special kind, and adapt it to surrounding conditions. Nevertheless, there are striking peculiarities which form principal features in all feet. For instance, the direction of the fibres of the wall are from above downwards; the plantar surface is circular; in front the hoof is conical, and in profile it is circular. In well formed feet, from which the frog and bars are removed, the outline is that of a circle, and the width is consonant with the height. Mr. Hunting had stated his belief that the frog stay is wrongly named. He (the President) did not think so, and in support of his belief had retained the term, while that part in front he had named the "toe-stay," as he considered it to be for the purpose, among others,

to prevent the foot rotating in its horny covering. The supposition that the horny laminæ are secreted by the sensitive laminæ he thought may be readily disproved by an examination of the spaces between the papillary tubes in the cutidural cavity, in which ridges or eminences are to be found as the result of secretion from the coronary cushion, and prove to be the commencement of the horny plates. In cases of disease, also, abundant proof appears evident, for where the wall has been destroyed horny laminæ may be seen to originate at the top and grow downwards. Maceration serves to separate each part of the hoof, but the horny wall and laminæ do not admit of separation by such means, and in transverse sections of the wall epidemic cells may be observed to enter in to form the horny plates, but in disease states are modified. In health the intertubulary substance is for the purpose of connecting the fibres of the wall and hoof, and preserve a degree of moisture and resiliency; in disease the hoof becomes dry and brittle as a result of the modified action. At the junction of horny wall and sole is a white, soft substance known as the white zone, placed there to prevent disjunction, but not secreted by the sensitive laminæ, which run down to and terminate in it. In disease the sensitive laminæ are to be observed covered with scales which form horn, but it is no integral part of the natural hoof; and likewise horny tumours formed upon the white zone or horny laminæ are morbid productions, the result of diseased action at the part. They do not grow down from the top as the nature of their construction thoroughly proves; besides the cells of the papillæ are sent down vertically, while those in the laminæ are horizontal, but no such orderly arrangement marks the adventitious products of morbid action, while it is conducive in the healthy structures to an efficient resistance to wear and fracture. The functions of the frog have been much misunderstood, and the theories of expansion and contraction have been most disastrous to the proper treatment of horses' feet. He thought Mr. Hunting was quite right when he said the frog had no part in expanding the heels. It is doubtless to sustain weight at the back of the foot, to avert concussion, and protect the tendon and navicular point above. The coronary cushion also admirably sustains weight, and receives and distributes initial concussion.

Mr. F. J. Mavor considered the wall to be the true supporter of weight on hard surfaces, and as it is constructed is most efficiently capable of conducting jar upwards, and thence causing it to pass off. He did not deny that upon soft ground the sole received pressure, but conceived that otherwise it is improper for it to do so.

Mr. T. D. Broad contended that the sole can sustain a degree of pressure with benefit, and gave as an instance the fact of great improvement taking place in that part of thin shelly feet by the use of nonseated shoes. Among the evils in the practice of shoeing he places the knife first, calkins second, and seated shoes last in order.

Mr. Alexander Lawson believed the crust should bear the greatest share of pressure [weight], frog next and the sole last. It is an

evil to nail on shoes tightly pressing upon the horny sole, as the many bruises and cases of suppuration which follow abundantly testify. He thought wrong principles have been embraced too long, as well as absurd practices carried out. The frog is evidently an admirably adapted cushion to protect highly organised parts within. He approved of a modificatian of the Charlier shoe—one somewhat stronger, but applied on similar principles, and he had found from experience that the feet, through the resulting sole pressure, were more prolific in horn, could resist shock much better, and the animal travel over the roughest macadam with ease and total absence of pain.

Mr. T. W. Gowing, senr., approved of pressure [weight] being borne by the wall alone. Continuous pressure on the sole had in his experience proved injurious.

The President urged that the sole of the horse's foot is intended by nature to receive pressure, and as a proof of this gave the fact that all animals in a state of nature present their soles to the ground, and in no single instance could he find that part absolved from taking part in weight bearing. Another proof is derived from the undoubted fact that when caused to bear weight the animal goes well, and the feet greatly improve by it.

Mr. W. Clark referred to the alteration in the form of horses' feet, which succeeded to change of locality, when surrounding conditions were of an opposite character. He also contended that for the sole a degree of pressure is not only essential but can be borne, and gave examples from the use of leather soles and stopping and india-rubber cushions.

Mr. Lawson gave further examples in proof of the benefit of sole pressure, particularly in the chronic states after laminitis.

Mr. Hunting, in reply, said he thought Mr. Mavor had misinterpreted the statements of Mr. Broad. Pressure derived from a non-seated shoe, as recommended by Mr. Broad, does not extend to the major part of the sole, but to those portions within the circumference of the wall. As the sole represents an arch, and the wall its abutments, pressure is confined to the extremities or springings of that arch, where the greatest points of resistance are presented. Pressure thrown upon the frog is transmitted throughout the whole foot, and not through the coffin bone, as erroneously supposed by some. And one of the offices of the frog is undoubtedly to distribute and break the force of shock which in its absence might be communicated to parts injuriously. As a proof might be given the position of the coffin bone, and its elongation backwards, by an amount of resilient substance—the lateral cartilages. It is a fact self-evident on a consideration of the anatomy of the parts. Shock given to the wall, as described by Mr. Mavor, transmitted through its fibres, cannot pass outwards as a material substance or of aëriform character. It is provided against by a harmonious arrangement of muscles and ligaments, with bones placed at convenient angles, all of which are engaged in a most wonderful principle of co-ordination, destroy the shock, which if communicated through an unbroken and

straight column would be productive of evil results. With regard to the observations of Mr. Clark, tending to the belief that the feet of horses assumed opposite forms when removed to localities exhibiting specifically different conditions, he (Mr. Hunting) could not coincide. A flat foot is unnatural everywhere; it is designed that the plantar surface should be concave. Flat feet admitted of unequal and inordinate pressure, and the result is absorption of the coffin bone and loss of shape (external form). He agreed with the President in the microscopical structure of the hoof, but had heard no opinion that agreed with his own on the formation of horny tumours within the hoof, of which mention had been made before, nor yet one that decided the horny laminæ, are decidedly secreted by the coronary cushion. The argument that they are sent down from above when the wall is stripped off, he contended, is without foundation, but rather that condition proves that the horn produced is direct from the sensitive laminæ, as they are quickly covered by horn material. It is their natural function, he contended, and no structure can secrete in disease that which it does not in health. It is no proof that the wall and horny laminæ are homogeneous from the fact that no separation can be produced by maceration; the latter are undoubtedly secreted in a great measure by the sensitive laminæ, hence the abundant blood supply to the latter, which would serve no purpose if they were mere weight carriers. Regarding the function of the frog, Lafosse had said it is to bear up the tendon above it. Tendons, however, are neither too long nor too short; always have the proper length, and require no such support. Its function appears to be to receive and distribute shock, and reduce its effects over the limb.

The President announced that Mr. James Rowe, junr., would read a paper at the meeting in January "On some of the Derangements of the Liver of the Horse," after which a cordial vote of thanks was awarded to the essayist and President respectively, and the meeting separated.

George Armatage, M.R.C.V.S.,
Secretary.

THE LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The Lancashire Veterinary Medical Association held the usual quarterly meeting at the Trevelyan Hotel, Manchester, on Wednesday, the 21st September, at 5 p.m.

Present,—The President, G. Morgan, Esq., Messrs. Greaves, W. Haycock, P. Taylor, and W. A. Taylor (Manchester), J. Brookes (Pilkington), W. Cartwright (Whitchurch), S. Buckley (Blackburn), C. Bostock (Altrincham), W. Whittle (Worsley), T. Walley (Manchester), J. E. Mather (Harpurhey), A. Lawson and A. Challinor (Bolton), and the Secretary.

The business commenced by the reading and confirmation of the minutes of the previous meeting.

Mr. P. Taylor proposed his son, Mr. W. A. Taylor, who was seconded by *Mr. Cartwright*, as a fit and proper person for membership.

Mr. Mather of Harpurhey was proposed by *Mr. J. Brookes*, and seconded by the *Secretary*.

Mr. James Lowe, of Bolton, was proposed by *Mr. P. Taylor* and seconded by *Mr. Bostock*.

Mr. Taylor, of Ashton, was proposed by *Mr. Peter Taylor*, and seconded by *Mr. Haycock*.

The above were all unanimously elected.

The *President* then proceeded to read his essay on scirrhus tumours, citing a very remarkable case of scirrhus cord, which was operated on unsuccessfully. At the close, a really first-class discussion took place, most of the members present taking part. Gradually the discussion drifted into the various forms of castration and the results, each speaker advocating his own peculiar way of performing the operation.

On the close of the debate, *Mr. Haycock* nominated Mr. Tedbar Hopkins for membership; *Mr. A. Lawson* also nominated Mr. W. Dacre. The meeting then broke up, after both an agreeable and instructive *reunion*.

W. J. Challinor,
Honorary Secretary.

Veterinary Jurisprudence.

WAKEFIELD COUNTY COURT.

TUESDAY, *September 27th*, 1870.

(Before T. H. MARSHALL, Esq., Judge.)

ACTION FOR DAMAGE TO A COW.—FISHER *v.* STRINGER.—This was an action to recover damages alleged to have been sustained in consequence of injuries inflicted by the defendant upon a cow belonging to plaintiff. Mr. Gill appeared for the plaintiff, Mr. Jeremiah Fisher, cloth fuller, Horbury; and Mr. Shaw, barrister, instructed by Mr. Barratt, for the defendant, Mr. John Stringer, basket maker, Horbury. The damages were laid at £25.

The circumstances which have given rise to the present action were before the public a short time ago in connection with proceedings at the police court, when Stringer was committed to prison for a month, without the option of a fine, for cruelty to the cow in question.

Mr. Gill, in opening the case, stated that plaintiff was the owner of a cow, and on the 6th of May last it chanced to stray on to some land which the defendant uses as osier beds; and while the plaintiff was absent for a few moments the defendant, as alleged, struck the cow with a heavy hack—an implement employed in cutting roots away from the willows—on the udder, thereby severely injuring the animal, insomuch that it was much reduced in value, and had done no good since.

Mr. Gill then called the plaintiff, who stated that on the 6th of May in the present year he had been with his cow to watering, and on returning up a lane he left it whilst he went to buy some tobacco at a neighbouring shop. Whilst he was absent the animal appeared to have strayed on to the defendant's premises, for on returning he found Stringer with a large hack striking her. He asked what he was doing, and Stringer replied that he had given her something which she would not soon forget, adding that he would do as much for him (Fisher), and then asking why he kept a cow, seeing he had "nowt" to keep it on. Plaintiff further stated that he gave £19 for the cow, and considered that prior to this cruelty she was worth £30. Formerly her yield of milk was, on an average, six gallons a day; now it was very little indeed. On the 10th of May plaintiff sent for Mr. Fallding, veterinary surgeon, to attend the cow.—Mr. Shaw, in cross-examination, elicited that Fisher did not lay a complaint with the police sergeant until the 16th May; and that his wife did not, in his hearing, tell Sergeant Wheelan that he never saw the cow struck. James Thresh, farm labourer, stated that on the forenoon of the day in question he was at work in a field

near the lane in which was the plaintiff's cow, and where defendant has some land. He saw Stringer "coming very savage" with a hack, and then he heard the sound of blows, and Fisher asking, "What arto doing?" to which Stringer replied, "I have given her some of this hack that she will not forget in a day or two, and I will do the same to thee." Being asked by Mr. Shaw how many smacks he heard, the witness replied, two or three, and on being questioned as to what time elapsed between each he laughingly replied that he did not know—he had not his watch with him. Mr. James Lockey, corn miller, who lives under the same roof as plaintiff, next spoke to the injuries the cow had received, and the consequent decrease in its value. Mr. John Farrar, uncle to the plaintiff, said the cow in question was one of the short-horn breed, and was sold by him to its present owner for £19. He considered the animal worth £25 or £26 before receiving this injury.

Mr. Fallding stated that he visited the animal on the 10th, four days after the alleged occurrence took place. Mr. Fisher told him that the animal had been struck with a hack by John Stringer. "On examination of the udder he found discolouration of the skin about the extent of the palm of his hand. This, in the course of a few days was succeeded by yellowness, and then the skin peeled off. On the back part of the udder there was extensive inflammation, tenderness on pressure, yellowness, as in the case of a 'black eye,' followed by the skin peeling off." In the course of a week or so the cow became very debilitated, and her appetite was impaired. He visited the cow up to the 28th May. His account was £3 15*s.* 6*d.* He also observed a slight abrasion and other indications of blows on the hind quarter of the animal. Cross-examined by Mr. Shaw the witness said the milk during his attendance on the cow was of a watery description, and the fatty globules were diminished in quantity. *His Honour:* Was it like the milk we buy? *Mr. Fallding:* Yes, blue (laughter). Mr. Fallding was then closely examined as to whether he might not have mistaken the indications he had spoken to, and whether the cow had not been suffering from a disease called joint felon, and not from any alleged injury inflicted by the defendant. He firmly maintained that there were no traces of that disease during the time he visited the cow.

Mr. Shaw then addressed the Court, remarking that he was instructed to give a direct denial to that which the plaintiff had asserted, and he had three witnesses—veterinary surgeons—who had examined the beast, who had conducted their examinations separately and alone, yet each was prepared to affirm that the animal was suffering from joint felon. He had another witness (Mr. Smith, of Barnsley) when the case was first set down for hearing, but who had, unfortunately, since died.

The defendant was now examined, and denied having touched the cow in any shape or form. The Judge cautioned him as to what had been advanced on the other side, but he maintained his statement, and did not hesitate to inform His Honour that he had served a month in prison for this alleged offence. He also denied having

made use of any such words as were attributed to him by the witness Thresh.

Mr. Martin Naylor, veterinary surgeon, then stated that he visited the cow on the 25th May, and he was of opinion that it was then suffering from joint felon. He found no marks upon the udder of the cow. He should say that the cow had been suffering from the disease named for ten or fifteen days prior to his visiting her. Mr. Naylor was subjected to a long and severe cross-examination by both His Honour and Mr. Gill, and whilst adhering to his opinion, he admitted that the appearances he saw might have arisen from the cause to which they were attributed by the plaintiff's side.

Mr. John Schofield, of Pontefract, and *Mr. Dray*, of Leeds, veterinary surgeons, were of opinion also that the animal had suffered from joint felon, and not from anything else. At the close of their examination His Honour adjourned the case until next court day, reserving his verdict until that time.

At the adjourned meeting, October 5th, His Honour summed up and gave judgment in the case. He recapitulated the points in the case with great perspicuity, remarking that the plaintiff took his cow to watering on the 6th May. The cow strayed on to the defendant's land. The defendant came up to her and, with an instrument described as a hack, he struck her very violently, and used some very angry language. This was corroborated by a witness, who swore that he saw the defendant strike the beast over the hind quarters. The effect of those blows, the udder having been injured, was that the cow ceased to give the amount of milk she had been accustomed to yield. Mr. Fallding, veterinary surgeon, visited the animal at intervals until the 25th May, and during that time he saw no traces of a disease called joint felon. Referring to the defence, his Honour said the defendant first of all denied upon oath that he ever touched the cow. He admitted that he was in the willow garth, with an instrument that was not a hack, but a hoe. He further called three veterinary surgeons as witnesses; but he was not corroborated in the assertion that he did not strike the animal. The three surgeons saw her a few days after Mr. Fallding ceased visiting her, and their unanimous opinion was that she was suffering from joint felon. They saw no marks of any wound, although one of them, Mr. Naylor, admitted seeing a certain indication of injury on a portion of the bag. They found no evidences they would have expected to find if such a blow as had been represented had been inflicted. The points to be decided were, therefore, was she struck, and was her debility produced by the blows she received, or by some disease? He was bound to say he entertained no doubt that defendant had sworn on his oath that which he must have known to be untrue. As to the damage, the question was, had she been so reduced by the injury inflicted, or by the disease which had been named? It was true he was in the habit, where a defendant had endeavoured to obtain a verdict by swearing falsely, if the damage were laid reasonably, to allow the

full amount claimed. In this case, however, the defendant had been before another tribunal for striking this cow, and his Honour inferred that it was because he denied the fact of striking that the magistrates took such a serious view of the case. He had no doubt the cow was injured by the blow which she received, and the only way, in his mind, to reconcile the case was this: She was struck, but not so seriously as the plaintiff seemed to think. He was not led to the conclusion that defendant struck the cow very violently. Had he done so there would, he thought, have been some abrasions of the skin and other indications apparent. He thought defendant struck the animal merely to teach her, as he said, not to go there again. He thought that under the circumstances he would be doing justice if he gave plaintiff a verdict for 15*l.*; but inasmuch as the defendant had given evidence which he was bound to believe to be untrue, he thought that plaintiff was entitled to have the full costs upon the higher scale (25*l.*).

PROSECUTIONS UNDER THE CONTAGIOUS DISEASES (ANIMALS) ACT.

Foot and Mouth Disease.

At the County Petty Sessions, Bridgewater, on September 29, John Crocker, yeoman, of Ilchester, was summoned for unlawful removal of two cows. On September 2 the animals were infected with the foot and mouth disease in a field called Gant's Barton, where Superintendent Jeffs saw them. The defendant was served with the usual notice. A week afterwards the cows had been removed to Middle Ham, about a quarter of a mile distant, where there were thirty-five other animals. The two beasts first affected had nearly recovered, but many of the others had become infected. Police-constable Sparks stated that he served a copy of the usual declaration on the defendant. *Thomas Wilkins*, herdsman, said defendant had given him instructions to take precautions to prevent the spread of the disease by keeping the infected animals apart from all others, and by not allowing the person who fed them to get along with other animals. In reply to the magistrate's clerk, Wilkins intimated that he considered it probable the animals got over a low stile (about two feet high), as soon as they were strong enough, into the adjoining drove, which terminated at Middle Ham. Several witnesses were called to prove that the beasts could escape from Gant's Barton into the drove and thence to Middle Ham. Defendant was fined 5*l.* and costs. He gave notice of appeal.—*Times.*

At Shaftesbury Petty Sessions, October 4th, William Herridge, farmer, of Kington Magna, appeared to a summons for keeping a

number of sheep affected with the foot and mouth disease in a field insufficiently fenced, whereby they passed therefrom on to the highway and thence into another field, contrary to the orders of the Privy Council. The defendant had been cautioned against the removal of the sheep from a field where they were seen by the police on the 30th ult.; but three days afterwards they were found in another field, where there was a quantity of rape-seed. There was also a gap in the fence of the field, where it appeared the sheep had been driven or passed through. Defendant denied all knowledge of the removal of the sheep, but admitted that the fence was bad. He was fined 1*l.* and costs.—*Ibid.*

A farmer named Bone has been summoned before the Ringwood magistrates charged with neglecting to give notice of the foot-and-mouth disease having broken out in his flock of 135 sheep. Some of the sheep were found to have blood between their claws, and appeared lame. The shepherd informed the defendant of it, and expressed his opinion that the disease was not foot-rot. Mr. Bone, however, considered it was a case of foot-rot, and this was his defence. The Bench, while expressing the conviction that the sheep were suffering from foot-and-mouth disease, dismissed the summons, on the ground that the defendant was not cognizant of the fact.—*Ibid.*

MISCELLANEA.

THE PRACTICAL EXAMINATION.

By A. Hoole, Veterinary Student, Sheffield.

Sirs,—I learn that at the last meeting of Council, held October 5th, it was decided that the practical examination of students—candidates for the diploma—should take place on one day, and the oral one on the next.

It was asked—"Why they should not take place on the same day"?

The objection was—"That it would be a great hardship to the student."

Now, sir, I believe the majority of students would much rather undergo both examinations on the same day, and not be kept in suspense. For, supposing a candidate gets through his practical examination, it would give him much more confidence for the oral one.

Au contraire, if he were plucked at the practical examination, I

understand he would not be eligible for the final test, and therefore his interest in the matter would for a time be at an end.*

It would be a much greater hardship for the examiner than for student.

I beg to apologise for having intruded on the columns of your valuable magazine, but hope you will kindly lend them for the ventilation of a subject in which I and many others are interested.

I am, &c.

To the Editors of the 'Veterinarian.'

* [We did not gather from the discussion which took place at the meeting, that the Council had determined not to admit the pupil to the final test who had failed in his practical examination.]

EIGHTY-ONE SHEEP SUFFOCATED.

In the week ending Oct. 15th, an extraordinary incident occurred on the farm of Mr. David Love, at Theale, near Reading. A flock of 194 sheep were grazing in a field, when two dogs set upon the flock and worried them, causing nearly the whole to rush in a corner of the field, where they all huddled together one upon the other, and while in this condition eighty-one of them were smothered to death. The sheep were the property of Mr. Samuel Gould, farmer, Mortimer, and were only temporarily placed in the field. The next day the sheep were taken to the kennels, and sold for 1s. each, being entirely unfit for human food. Only one of the sheep appeared to have been bitten by the dogs, and the breast of that was fearfully mutilated.—*Times.*

OBITUARY.

We deeply regret to have to record the death, from apoplexy, of Dr. W. A. Miller, Professor of Chemistry, King's College Hospital, which melancholy event took place on September 30th at Liverpool, whither he had gone to attend the meeting of the British Association. Dr. Miller was one of the Examiners in Chemistry to the Royal College of Veterinary Surgeons, to which appointment he succeeded in 1866, on the death of the late Professor Brand. From the several obituary notices which have been published respecting him, we learn that he was born at Ipswich, on December 17, 1817, and was educated at Merchant Taylor's School and at a Quaker's

seminary in Yorkshire. He studied for the medical profession at the Birmingham Hospital, and then entering King's College, London, assisted the late Dr. Daniell, who was Professor of Chemistry there. In 1839 he gained the Warneford (theological) medal. In 1840 he visited Germany, passing some time in Liebig's laboratory at Giessen, and in the same year became demonstrator in King's College. About this time he took the degree of M.D. in the University of London, and continued to assist Dr. Daniell till the death of that gentleman in 1845, when he was appointed to the vacant chair of chemistry. In 1851 he was one of the Government Commissioners to report on the water supply of the metropolis, and was assayer to the Bank of England and to the Mint.

We have likewise to record the death of Godfrey Smith, M.R.C.V.S., Darton Cottage, Barnsley, Yorkshire. His diploma bears date May 9, 1860.

Also of Rose Stanley, M.R.C.V.S., of Melbourne. Diploma bears date December 22, 1858.

John Ryder, M.R.C.V.S., late of Liverpool. Diploma bears date May 8, 1844.

James Channon, M.R.C.V.S., of Taunton, Somerset. Diploma bears date January 21, 1826.

John Clarke Gillingham, M.R.C.V.S., of Spetisbury, Dorset. Diploma bears date April 21, 1869.

Alexander Carmichael, M.R.C.V.S., of Ripon, Yorkshire. Diploma bears date April 12, 1840.

Joseph Doyle, M.R.C.V.S., of Dublin. Diploma bears date May 16, 1833.

Alfred Blogg, M.R.C.V.S., of Ipswich. Diploma bears date December 21, 1868.

And of Thomas Salusbury Price, M.R.C.V.S., Kennington Cross, Surrey. Mr. Price had reached the patriarchal age of 86. He entered the profession somewhate late in life, as his diploma bears date February 10, 1825.

THE

VETERINARIAN.

VOL. XLIII. No. 516. DECEMBER, 1870. Fourth Series. No. 192.

Communications and Cases.

THE STRUCTURE AND PHYSIOLOGY OF THE HORSE'S FOOT.

By T. D. Broad, M.R.C.V.S., Bath.

In the November number of the *Veterinarian* Mr. Greaves propounded several questions on the structure and physiology of the different parts of the horse's foot, and I consider that some of the answers are very erroneous. Mr. Greaves states "that the wall and horny laminæ can be produced perfectly when not a vestige of sensitive laminæ exists underneath." I say that it is impossible. The sensitive laminæ are not only essential to the formation of the horny laminæ and wall, but also to their nutrition and function, for whenever the horny laminæ become separated from the sensitive laminæ the horny laminæ become dry and crumble into a powder. The wall also becomes hard, dry, and condensed. The connecting substance between the sensitive and horny laminæ is a secretion of non-fibrous horn cells, which is being constantly exuded from the surface of the sensitive laminæ between the fibres of the horny laminæ and the fibres of the wall, the outer portion of which is also being constantly supplied with this kind of material from the papillæ of the coronary cushion principally. In case of separation of the horny from the sensitive laminæ either from accident or disease, this secretion quickly covers and protects the sensitive laminæ from injury; it is a natural production, and cannot be termed an excrescence, or horn-tumour.

"Are the sole and frog destined by nature to bear pressure?" Yes, but not if allowed to be cut and carved in

the manner that I see many of my friends allow their farriers to do. The question is not what feet will bear it, but what feet will not; if the knife be kept from the sole and frog for a few weeks, an unseated shoe may then be fitted on the foot hot, so that the whole width of the shoe (whether cart-horse or pony) bears equally and levelly on the sole as the wall, that is if the sole be sufficiently developed; but if not, the wall is not to be injudiciously lowered for the purpose of making it all level.

Under this system of shoeing there is no danger of inflicting pain, brusing the sole, or producing suppuration from pressure, as is the case under the paring system. If Mr. Greaves doubts the correctness of the above statements, and will come to Bath to see the plan carried out practically, I hope to convince him that I am right. In acute cases of laminitis, when the disease is not arrested, separation of the horny from the sensitive laminæ takes place in consequence of suspension of nutrition, or of the ordinary exudation of non-fibrous horn cells from the sensitive laminæ, and not, as is generally supposed, from the effects of effusion producing a mechanical separation. The amount of separation or divergence of the coffin bone from the wall will mainly depend upon the strength of the horny sole to bear the increased weight imposed upon it by the coffin bone after it has lost its attachments with the horny laminæ. If the sole is thin from having been pared, there is a danger of the toe of the coffin bone softening and protruding through it; in that case it will become nearly upright, leaving a large space between it and the wall. The sensitive lamina will then protect itself by throwing out a thick covering of non-fibrous horn, but the entire hollow space will not be filled up. The ultimate appearance of the feet will much depend upon the toes being kept very short, otherwise they will become pithy from an accumulation of non-fibrous horn. Disease may consist in an alteration in the rate at which a tissue lives and grows. If textures which, in the healthy state, grow very slowly, appropriate nutriment with undue rapidity and in unusual quantity, disease results. As an illustration see how thick (hypertrophied) a certain portion of the wall of a horse's foot often becomes after the coronet has received an injury sufficient to produce chronic mechanical congestion of the vessels. And, in like manner, if the rate at which nutrition goes on be reduced much below the normal standard, the morbid state is developed. As an illustration in a mild form take seedy foot, and a case of acute laminitis unsuccessfully treated as a more severe example. In very

many cases the chief difference between a healthy and morbid condition of a given tissue is in the rate at which the nutrient matter distributed to it is taken up and appropriated, and in the rate at which the production of formed material proceeds. More light is likely to be thrown upon the nature of the changes occurring very early in the diseased state by the veterinary surgeon who has studied in his private room with the aid of the microscope, than by the veterinary surgeon who has restricted himself to observations of the animal in his stable.

SCROFULOUS TUMOURS IN THE MESENTERY.

By the Same.

On the 27th of October last I attended Yeovil County Court for the purpose of giving evidence in a case of breach of warranty of a cow which had been sold in January last at £23 in good condition, she had calved a day or two previously. According to the evidence of the plaintiff the cow had milked on pretty well for two months, after which she began to lose condition, and give less milk, and continued to get gradually worse until July, when she died. Mr. Symes, veterinary of Yeovil, made a *post-mortem* examination, and stated in his evidence, which was corroborated by three or four butchers, that one of the mesenteric glandular tumours weighed $1\frac{1}{2}$ cwt., and that there were several others which resembled bunches of grapes. The defendant stated that he bought the cow a day or two previously of a farmer, who also stated in his evidence that he had had the cow six years, and never knew her to be ill or in any way amiss during the time she was in his possession. Verdict for plaintiff.

DISEASE OF THE LIGAMENTUM NUCHÆ OF A HORSE.

By the Same.

On the 28th of September, 1847, I opened an abscess on the withers of a black cart horse, and dressed the wound with a solution of sulphate of zinc; early in December it had healed up, and appeared to be all right. On the 28th of March

following another abscess formed, which I laid open very freely, and dressed as before; with a little subsequent attention it healed up in the early part of May. On the 31st of August it was again necessary to open another abscess near the seat of the former one; by November this also had completely healed, and all remained well until the following 16th of July, when another large abscess formed, which I laid well open, by which I was enabled to see that the ligamentum nuchæ was extensively diseased. I now advised the owner to have the horse destroyed, but it was not done before August 22nd. For the last month the poor animal could not support its head without resting it on the manger; he was fed on green food, or would not have lived so long.

On examining the neck after death, I found a small portion of the ligamentum nuchæ attached to the occiptal bone, and some more on the spinous processes of the dorsal bones. Between those parts there was not a vestige of the ligament to be seen, and the muscles were so atrophied that but little of the fibrous structure remained.

ON THE USE OF THE ACTUAL CAUTERY.

By the Same.

In reference to the controversy in the *Veterinarian* between Mr. Wilson and Mr. Hill respecting the imaginary disease lampas, I can only say that I have for some years past told my employers and their servants that any person who either burnt or lanced a horse's gums because they happened to be below the level of the teeth, ought to have their own gums served in the same manner. It is quite time that men of science should discountenance such relics of a gone by age. The practice of firing horses has gone much out of use, and I think justly so. There are, no doubt, cases in which it acts beneficially, as during the formation of bony deposits, or disease between the cuneiform bones of the hock, by decreasing the original pain, and by increasing the process of absorption of the articular cartilage, and by producing an increased cell growth in the part, and thus hastening the development and formation of new bone. For unless all the cartilage is absorbed, and the bony union (anchylosis) completed, there will be a greater liability to a recurrence of lameness. The process in general is a very slow one. If the

remedies are too severe, or the horse be worked too much during the progress of the disease, it will be very liable to extend to the upper surface of the cuneiform magnum; in that case the lameness will be permanent. Firing does not produec the effect of a permanent bandage; that theory is a mistake.

I advise my young friends to be very careful in the selection of cases for inch or half inch deep firing, or they will probably get themselves into much discredit. I have known many cases of tetanus to supervene upon very deep firing, but have never known it to result from moderate firing. What a common remark it is to hear pronounced upon the appearance of very deep firing, "Who fired that horse?" "Mr. So and So." "He should not fire a horse of mine,"—notwithstanding that the horse may have recovered from the lameness for which he was fired. Coarse skinned cart-horses will bear much deeper firing than any other class of horses.

ON THE USE OF THE ACTUAL CAUTERY IN "LAMPAS."

By Alfred Owles, M.R.C.V.S., Aldershot.

Until this day I did not think it would be necessary, in the interests of our equine patients, to protest against such severe treatment as is advocated in the *Veterinarian* for November, by Mr. Wilson, for what is vulgarly called "lampas;" but as Mr. Wilson writes principally for the instruction of the younger members of the profession, it may be as well that those gentlemen should consider the rationale of the mode of treatment which he recommends for a condition of the palate of horses which is, I unhesitatingly assert, the natural state of that part in all young horses, *i. e.* the palate projecting below the incisor teeth, before performing the operation of cauterising the inside of the mouth of a horse, because he does not feed properly, and the palate (I find Mr. Wilson calls it the gum) projects below the teeth.

This prominence of the palate will be found, in the examination of 100 young horses' mouths, to be the normal state of the part.

Mr. Wilson's ideas of the treatment are, as he admits, not based upon science, but upon practice. Will he permit me to recommend a careful study of the mouths of young horses in

health, and which are feeding well, in the hope that he will see reason to modify his views?

MELANOSIS.

By Neil Barron, V.S., Turriff.

I now send a short history of the case which furnished the morbid parts forwarded to you a day or two since. The animal was a grey cart-horse, twelve years of age, and belonged to Mr. Mair, a farmer in this locality. He exhibited a tendency to melanotic deposit when very young, by the formation of a tumour on the left hip, which soon acquired the size of a common fowl's egg, but remained without further increase the rest of his days. He was a spirited animal, and worked actively until within a week of his death. About two years ago another tumour appeared in the left side of the scrotum. This increased gradually, so as to acquire a weight of 8 lbs. (it is the largest inclosed with the spleen which I send). This tumour had become very pendulous latterly, and on different occasions was surrounded by a great amount of watery effusion, extending along the under surface of the abdomen, which quickly yielded, however, to a purgative and diuretics with fomentations locally. On Monday, 10th October, a more than ordinary amount of swelling had taken place in the parts indicated. His pulse was feeble and his appetite lessened. He had a staggering gait, had not urinated for many hours, and was unable to take the position usually assumed in that act. Examination per rectum revealed a distended bladder, enlargement of the kidneys, and the presence of a hard tumour in the psoæ muscles.

Suspecting the presence of internal deposition similar in kind to that visible externally, I advised the owner to have the animal killed, as no remedial measures would now avail. He concurred, and as the horse was not suffering acutely, and still eating a little, I drew off his urine and deferred the slaughter until I should have convenience to make a proper inspection *post mortem*. By the 13th he had fallen and lost nearly all power of his hinder quarters. On same day he was therefore slaughtered, and I made an examination of the carcase, and found as follows:

Externally.—Besides the large tumour in the scrotum there were a great number of small ones in the same region, and

one of medium size imbedded in the muscles of the mid-cervical region.

Internally. — On opening the abdomen an enormously enlarged spleen presented itself, containing in its structure a vast number of tumours closely packed together, the whole weighing over 17 lbs. The diaphragm and portions of the intestines were thickly studded with small deposits. The liver and kidneys had in each of them some half-dozen tumours varying considerably in size. The one in the psoæ muscles was pretty large. It is inclosed with the spleen. The bladder was much attenuated from frequent distension. The cuticular half of the stomach was unaffected, but in the villous portion of that organ were three circular excavations, extending quite through the muscular coat, about an inch and a half in diameter; their edges were swollen, irregular, and gangrenous looking. They had an appearance of a tumour being formed in each and been separated by suppuration.

I regret exceedingly that the messenger who brought in the parts I have forwarded neglected to bring the stomach. The chest was free from disease, with the exception of a pretty extensive cluster of the deposit in the fourth intercostal space on the right side and towards the vertebræ.

[The morbid specimens consisted of the spleen, and various pieces of partially consolidated tissue, apparently enlarged scirrhous lymphatic glands, having deposited in them a quantity of black material of a melanotic character. The spleen measured three feet in length, and weighed sixteen pounds. On cutting into it the increased size proved to be caused by a deposition of a large quantity of cancerous and melanotic matter].

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.L.S., F.G.S., &c.

(*Continued from p.* 815.)

Barley.—The Genus *Hordeum*, to which barleys are referred, though presenting but few species, is remarkable for the number and variety of its cultivated forms.

The true origin of cereal barley is a problem difficult to determine. Professor Lindley, who paid great attention to this subject, and who obligingly sent us seeds of the forms presently to be described, has the following remarks upon the subject:

"The *Hordeum distichum* is the only kind of barley that has been found apparently wild. We have now before us specimens gathered in Mesopotamia during Col. Chesney's expedition to the Euphrates, with narrow ears, a little more than an inch long, exclusive of the awn, or four and a half inches, awns included; and others from the ruins of Persepolis, with ears scarcely so large as starved rye. Both are straw-colour, but that from Mesopotamia has the glumes much more hairy than the other." The plant is also said to inhabit Tartary. The report that it grows wild in Sicily seems to have arisen from the Mediterranean *Ægilops ovata* having been mistaken for it. To this species belong all the varieties of Cercal Barley. When, then, we consider that some kinds of barley have two rows of seeds to each ear, others four, and others again six, it becomes a curious subject for inquiry how such different forms can have proceeded from one species. The morphology of this matter can hardly be better explained than by quoting the following description of the *Hordeum pratense*, a common pasture species:

"Spike one and a half to two inches long, close and cylindrical. To each notch are *three pairs* of awn-like, rough glumes; within the central pair is a flowering glume, lanceolate, but completely rolled round the flower, and tapering into an awn as long as itself; within each of the two lateral pairs is usually an inner glume, smaller than the central one, either empty or enclosing a male or rudimentary flower."—'Bentham's Handbook of the British Flora.'

The nature of these changes may be best understood by the following digrammatic arrangement:

H. DISTICHUM.	H. SIBERICA.	H. HEXASTICHUM.
Two-rowed by abortion of four rows.	Four-rowed by abortion of two rows.	Six-rowed by the fruition of all the rows.

The seeds of a spikelet.

1. *H. distichum.*—The varieties of two-rowed barley are those mostly cultivated, and indeed it is to them that the term barley is usually applied, the four- and six-rowed sorts getting the name of *big* or *bere*. Of the two-rowed barley are several varieties in cultivation, among the best of which are the Chavelier and the common English barley. The

first of these is of a bright colour, and is much esteemed for brewing the finer kinds of ale; the second is little if at all inferior, its more golden tint not at all interfering with the brightness or colour of the finer pale ales.

Of course all varieties of barley depend much upon the nature of the soil and the kind of cultivation for malting qualities; and hence it follows that not all the barley grown is fit for malting purposes, either by reason of a capability to malt properly, or from being harvested in bad condition.

2. *H. Siberica.*—This, as being either four- or six-rowed, shows its connection with both the two- or six-rowed kinds. Professor Lindley says of it:

"This barley differs from the common bere in its seeds, which separate from the chaff in threshing, but the form of the ear is similar, although longer. It is cultivated in the North of Europe, where its earliness and rapid growth suit the short summers; but in the British Islands its cultivation has met with but little encouragement."

We have grown it by way of experiment, and were not a little struck with the fact that the seed separated from the glume as readily as does that of wheat; and it is somewhat curious that it should possess qualities somewhat analogous to those of wheat, and it is stated that it makes a flour superior to that of wheat. The learned Professor just quoted concludes that "the Siberian barley might be profitably cultivated in some of the higher and later districts of Scotland and Ireland, where the produce would be valuable for grinding into bread-meal. It is about a week earlier than common bere."

3. *H. hexastichum* is grown in Scotland under the name of "Bere." In England it is known as winter barley, and being sown before Christmas is harvested as one of the first of our grain crops. There are two varieties known, one as the white bere, the other the black bere, or big We well recollect the noise made about the black-skinned barley, but we again quote Professor Lindley, as his remarks are interesting on this point. He says:

"It is only lately (1848) that a considerable sale of black barley, at high prices for seed, was effected by the advertisement of a history belonging to it, which was singular enough to attract attention. The whole of the stock was raised, it was said, from a seed taken from the crop of a goose which was shot on Lake Simcoe, in West Canada, when on its southern autumnal flight! There was no need for the Canadian to have sent us the produce of this solitary grain. We have abundant stock of these varieties at home, as would

long ago have been known to farmers if either of them had deserved a more extended cultivation."

The common or white bere is more cultivated in Scotland than in England. It is only fit for feeding purposes. Its produce is often larger than other kinds, but its price is usually so far below the finer barleys as to make the latter more profitable where the soil and climate are suitable for it. Where land is cold and poor for want of good cultivation, bere may be grown to advantage; but as it gets in better heart by liberal management, there is no doubt the farmer will substitute the ordinary English barley for it. This is, indeed, now being done in Scotland; where superior cultivation prevails the coarser barley is the exception rather than the rule, which latter prevailed only in rudely cultivated districts.

Cultivation.—Throughout England barley is usually made to succeed the root crop, and it may be interesting to note that though one would think every part connected therewith had been long since settled, yet our experience of the growth of barley in one of the best barley districts in the west of England shows a difference in the simple matter of the quantity of seed to be sown, ranging from four bushels or sixteen pecks to one bushel or four pecks to the acre.

During the last seven years we have sown as under, the first three being more or less guided by the practice of our neighbours, the last four being the results more or less of experiments first tried in order to feel our way.
It should further be noted that each year's crop ranged over more than 100 acres.

In 1864	was sown	16	pecks to the acre.
1865	,,	12	,,
1866	,,	12	,,
1867	,,	8	,,
1868	,,	8	,,
1869	,,	8, 6 and 4	,,
1870	,,	6 and 5	,,

Now, we cannot help thinking that the thinner sowings have produced the best crops of head-corn, as since we have adopted it the grain is uniformly plump, and little is separated by the best processes which we can adopt to make a good sample.

The so-called "pedigree barley" has a fine bold grain, and to show that this result is mainly due to thin seeding we sowed a good sample of our own barley by the side of some of the pedigree at the rate of four pecks to the acre. In both cases the plants stooled out very much, the straw was stiffer,

the ears longer, and the grain heavier and better than the rest of the field sown with double the quantity of seed. There is, however, a limit to this reduction of seed, and it should be accompanied with good cultivation, and earliness, and cleanliness in all our work. In practice we intend to use in future six pecks as the best proportion for seeding on a farm where we are informed as much as twenty pecks had been formerly employed.

Uses of Barley.—As has already been hinted at, barley is largely employed for brewing purposes, including distillation, as also for feeding principally of cattle and pigs. In studying this, however, we must speak of the grain and straw separately.

We have before stated that oats form the principal corn food for horses, and this practice has prevailed for the simple reason that in no grain are the muscle-making and fat-producing elements so largely combined as in oats. Professor Playfair says:—

"1st. That the quantity of starch in the oat is nearest to that of barley.

"2nd. That the oat is very rich in oil or fatty matter.

"The fattening matter of oats must be very great. With the exception of Indian corn, in which Boussingault found, on an average, seven per cent., and Dumas nine per cent. of oil or fatty matter, none of the other starchy feeding materials contain so much fat.

"3rd. That the proportion of flesh-forming matters in good oats is larger than in wheat, barley, Indian corn, rye, or buckwheat. For the production of muscle, oats, even including the husk, must therefore be considered as superior to almost any other corn."*

In order to show these points the more clearly we now quote proximate analyses of barley and oats, the former by Professor Playfair, the second by Professor Voelcker, arranged from an average of numerous analyses, both quoted from Morton's 'Cyclopædia of Agriculture.'

* These conclusions, though quoted in our last, are here reproduced in order to make our argument the more clear.

Composition of 100 parts.	Air-dried Barley.	Air-dried Oats.
Substances containing nitrogen, and capable of forming flesh	13 parts	13·6
Substances not containing nitrogen, and fitted for support of animal heat and formation of fat	69½ ,,	70·3
Ashes	3½ ,,	3·3
Water	14 ,,	12·8
Total	100 ,,	100·0

These results are very conclusive, and they tend to show us that however slow we may be to understand the reason for a general custom, there is generally a sound one at the bottom of long established usage. Hence, then, the botany of cereals does not explain all the facts without the aid of the chemist; at the same time it is a moot question whether here even chemistry is complete without a knowledge of botany, or that botany in the full elucidation of its principles includes chemistry. As touching inquiries of this nature, most instructive matter may be gathered from a consideration of the ash of barley taken in connection with its growth and habits.

The following is given by Professor Voelcker as the means of several analyses both of grain and straw, and both are of interest in several particulars. To the farmer, as showing the matter taken off the soil in a crop of barley; to the vegetable physiologist, as explaining how this crop is so much better on some soils than on others. From these analyses the farmer

Comparative Analysis of Barley.	Grain.	Straw.
	Grains.	Grains.
Potash	15·61	22·17
Soda	5·03	0·84
Lime	3·06	7·59
Magnesia	8·04	3·55
Oxide of iron and loss	1·24	4·35
Phosphoric acid	35·68	3·22
Sulphuric acid	1·22	2·61
Silica	28·97	46·30
Chloride of sodium	0·45	9·37
Total	99·30	100·00

can see how it is that he gets the best crop of barley after roots which have been grown with both artificial manure and farmyard dung; this is shown by the large per-centages of potash and phosphoric acid. As regards the magnesia, Professor Voelcker remarks: "One of the most marked ingredients is magnesia, which, though it exists in all cereals, seems to be especially abundant in barley. This accounts for the fact that barley is generally successfully cultivated on magnesian limestones, and points to the advantage of supplying magnesia when it is deficient in the manure."

Now, as all limestones contain more or less of magnesia, the success of barley-growing on *cornbrash*, whose very name is derived from the fact that it is, even though a brash, good for corn, this point will be made clear by the following analysis of cornbrash, which was kindly performed for us by Professor Voelcker, in order to elucidate some geo-agricultural facts in connection with this rock.

Analysis of Cornbrash.	Grains.
Carbonate of lime	89·195
Magnesia	·771
Sulphate of lime	·241
Alumina	2·978
Phosphoric acid	·177
Soluble silica	1·231
Insoluble siliceous matter	4·827
Alkaline salts	Undetermined
	99·420

Now, though doctors may differ about the administration of their medicines, there seems every reason to believe from these data that the vegetable physiologist, the chemist, and the intelligent farmer will all agree that sulphate of magnesia —Epsom salts!—may at least be beneficially employed in dosing barley land.

It now only remains to point out that barley straw is also much used for feeding purposes. Its air-dried proximate composition may be quoted as follows:

Nitrogenous organic matter	1·70
Organic matter free from nitrogen	82·12
Ashes	5·24
Water	10·94
	100·00

This is mixed both for cattle and horses with hay, and cut into chaff, and both do well upon it if they have a little corn. Cattle are kept on barley straw in strawyards all the winter, and too many on it alone; it is, however, bad economy, as

straw alone makes but a poor manure, while cattle, and especially gravid animals, want better keep both for themselves and their progeny. It is always advisable to give cake in the straw barton, both for the well-being of our animals and the fattening of the land! A remark which shows how intimately one science is connected with another, and ought, we think, go far to convince the veterinary student that time spent in acquiring the principles of science is not wasted.

THE DISEASE TERMED KIDNEY DROPPER.

By M. Hack, M.R.C.V.S., Leicester.

Not having seen an answer to *Quæsitor's* letter respecting a rare disease of horses known to "copers" as "kidney-droppers," I beg to say that, although I have not met with a case answering to the vulgar name, I have ascertained, from a reliable source, the symptoms resulting from the disease, viz. a horse or mare affected with it (for it is not confined to either sex), will, if suddenly frightened, drop down with the hind legs, but, on recovering itself, will perform all its duties, and carry a man at a fast pace, thus enabling the "screw" dealer to palm off an unsound animal upon the unwary purchaser. The disease is different from that known as "*shiverer*." In this respect the "kidney-dropper" will not necessarily show any symptoms of the ailment by the test of backing or turning, but, on the contrary, may work for hours unnoticed, then suddenly lose the use of its hind quarters.

I think the seat of the disease must be in the nervous system; its true pathology I hope to learn more of from some other of your contributors. I have endeavoured to describe the symptoms in such plain terms that the readers of the *Veterinarian* may readily detect the screw "kidney-dropper."

MR. J. W. HILL, IN REPLY TO MR. WILSON ON THE USE OF ACTUAL CAUTERY.

I must apologise for again intruding upon your valuable space; but I think Mr. Wilson's remarks, in reply

to my letter on "Actual Cautery," need an answer, as they do not in any way, that I can see, tend to disprove my statements or substantiate his own.

First, with regard to what appears to be the chief point in the discussion, or, at all events, the point upon which Mr. Wilson chiefly argues, viz., firing for lampas.

Is there any absolute necessity, I ask, to treat this irritated condition of the gums, consequent upon teething, with a red-hot iron (be it flat or curved)?

Again, I will put it to the profession at large, which is the more humane, to treat the case in the simple way I before described, viz., the lance and soft food (which, I affirm, to be all that is necessary), or for the sake of gratifying the whim of some would-be knowing individual (for I can scarcely conceive that common sense would ever dictate to us to inflict such excruciating and unnecessary treatment for so trifling an affection), to burn down to a level with the teeth, as Mr. Wilson says, this inflammatory condition of the gum.

But Mr. Wilson states that it cannot be cruel if it alleviates pain. Well, I cannot reconcile this with my ideas of cruelty, for I contend that when we can alleviate pain by a simple and almost painless operation, then it is nothing more or less than an act of cruelty, if to satisfy our own or other people's fancy, we perform an unnecessary and painful one.

But what are Mr. Wilson's reasons for using the iron in these cases? One is that he never gets a return of the lampas, which he states he does after lancing. True. Could he expect it after destroying to such an extent the structure of the parts? And even supposing the swelling to return after the lance, which I grant it sometimes will, a repetition of the treatment which I advocate will again disperse it. Aye, and I would repeat the treatment twenty times if necessary, rather than disgrace my profession, as I believe I should be doing in applying the hot iron as a cure for lampas.

Again, I certainly cannot conceive that after the application of actual cautery to the mouth the animal will resume his feeding much sooner than if the lance had been used, which is another of Mr. Wilson's reasons for using it.

Further, with regard to our clients not believing in the use of the lance, though I have been asked repeatedly to burn the lampas out, yet when I have pointed out to them the uselessness of the operation, and the unnecessary torture the animal is put to, they have, without a single exception, taken a common sense view of the case, and allowed me to adopt the treatment I have previously mentioned.

Lastly, the case which Mr. Wilson alludes to of the palatine

artery being divided, I do not consider any argument in favour of the cautery; on the contrary, I should think the accident the result of clumsiness, or ignorance on the part of the operator as to the position of the vessel.

Furthermore, I am astonished to read Mr. Wilson's remark that he is directly and decidedly opposed to unnecessary and cruel operations, when at the same time he is advocating a mode of operation which is (as I believe the majority of the profession will admit) both unnecessary and cruel in the highest degree.

With regard to tetanus following operations, I will not take up time and your valuable space in dwelling upon this point; suffice it to say I have never yet seen the disease as a result of amputation of the tail; and considering the vast number of horses that are thus operated upon, tetanus as a result is rare indeed.

With respect to my remarks upon inch-deep firing, I do not consider it will tend in any way to strengthen them by adding thereto. I will only observe that I cannot imagine that such a destruction of tissue can possibly be attended with those good results which are as easily obtained in ordinary firing. I hope, however, that the opinions which I trust will fall from the pens of our most valued writers and practitioners will throw much light upon this all-important subject.

In conclusion, Mr. Wilson defends himself on the plea of my being theoretical, simply because he was once upon a time in such a state himself; however, I will let that pass, merely remarking that the practical knowledge of a student when he enters the College will never obtain for him his diploma, and that a combination of science and practice is necessary for our success in life. As a young member of the profession, I am certainly obliged to Mr. Wilson for his good intentions; at the same time I shall scarcely feel disposed (neither do I think will other young members) to adopt a mode of operation which was in use, and, therefore, with perhaps some little excuse, a century ago.

With regard to sitting hour after hour listening to lectures, scientific addresses connected with our Colleges, I am under the impression that if there is a fault, it is on the other side, viz. that there is not time enough during the present regulations to hear as much as we should do. Lectures, practical or theoretical, written or extempore, must afford to a willing listener some amount of interest, and give him new ideas, together with a knowledge upon subjects that otherwise he might not trouble himself about.

Certainly my ideas, however much in the course of years

they may change (as Mr. Wilson says), will never undergo such a change as to lead me to believe in the application of a red-hot iron for swollen gums!

OUR SOCIAL POSITION.

By James Fraser, M.R.C.V.S., Ripon.

For some time past veterinary science has been endeavouring to make rather rapid strides, and very lately several articles have appeared in your Journal the writers of which are evidently most anxious to assist the onward progress of the profession. The advantages derivable from the charter, preliminary and practical examinations, system of teaching in our schools, and other important matters, have all been more or less freely discussed; but there is one among many other kindred subjects which is yet untouched, and which would, to my thinking, tend to elevate us more in the estimate of a right-thinking public than any other. I mean the cultivation of a strictly moral conduct in all we say and do. I am reluctantly constrained to believe that inebriety, and even profanity abound in our ranks to a *greater* extent, according to our number, than in any other profession. This is rather plain speaking, but it is no less true. What a host of brethren one meets whose conduct makes him blush; persons who seem to be entirely devoid of everything pertaining to a gentleman, and whose only object would appear to be immediate gain, at any cost of character.

Under such circumstances is it a matter of surprise that we are so much looked down upon, or that the verdict, "You are a rough set," should be so freely bestowed upon us? Surely there is nothing in the nature of our profession which debars us from taking our stand as men of science and gentlemen.

It may be asked whether it is becoming that we should appear "in colours" on country racecourses, acting the jockey for some speculating horse-trader? Can we not make a respectable living without such degradation? I maintain that our conduct and general bearing should be of such a description as to admit the severest scrutiny without censure. Doubtless there are many amongst us with whom any person might feel it an honour to be acquainted; but at the same time it must be admitted that there exists a large number who are a disgrace to the profession of veterinary medicine, and just as a bad name, like "a thorn in the side," hindereth the runner in

his running, so we are kept from making rapid advances by those of whom I am speaking.

It is high time that something should be done to alter the existing state of things, and I take the liberty of suggesting the following simple method, viz., that, in addition to a more rigid enforcement of the existing preliminary examination, every student who wishes to enter the College shall produce a certificate of respectability and good character from a clergyman or other minister of religion. By this means, I venture to say that in a few years men of "higher worth" would be induced to enter the profession, and would not think it beneath them to be known as veterinary surgeons. Then, but not till then, can we expect to command, as a body, the esteem and confidence of an intelligent and close discerning public. I do not wish to intrude any further, at present, on your valuable space by adding to these remarks; but I do hope that some one with greater influence will take up this subject, that it may be discussed in a manner corresponding to its importance.

[We refrain from expressing any opinion at present on the views of Mr. Fraser with regard to the social position of the veterinary surgeon, or on the means which he suggests for its elevation. The proposed plan, however, we may say, does not possess any novelty, and we think we are right in affirming that something very like it was in operation in the earliest days of the Royal Veterinary College. Persons wishing to become pupils had in those days to bring with them proofs of respectability and of possessing the elements of a good education.—Eds.]

CASE OF RABIES IN THE HORSE.

By B. R. Kirk, M.R.C.V.S., Huddersfield.

This district of Yorkshire has acquired a rather unenviable notoriety in being a centre of infection for the above-named dreadful disease, and it has been my lot to have had several indisputable cases brought under my notice, but up to the present time they have always been canine patients. As I believe rabies is a rare disease in the horse, I thought that a plain description of the case might not be uninteresting to some of your readers. On Saturday night last, the 12th ult., I was requested to visit a horse, the property of W. H. Aston, Esq., of this town. On my arrival I was informed

that on this morning Mr. Aston had set off to take a drive, and that this animal was put in the trap. From his account the horse never went better, the only fault being he was too fresh. Arriving at the journey's end, the horse was taken out of the trap and put in a stable. About three o'clock in the afternoon, when about to return, Mr. Aston found the horse out in the yard, but well covered up. On inquiring the reason, he was informed that the horse had been very violent, and had knocked the stable window out. Mr. Aston then examined the horse, and found him trembling a great deal, so at once he sent him back to Huddersfield, giving the man instructions to send for me as soon as he arrived. I saw the animal at 5 p.m. and examined him closely; his pulse was natural, breathing regular, body and extremities warm, though he was trembling violently. He made frequent attempts to void urine, and when I touched him on his breast or flanks he screamed out. I came to the conclusion from what I saw that his nervous system had received a violent shock, and consequently administered a sedative draught combined with a laxative, and promised to see him again at 10 p.m., which I did, and found him apparently easier. I gave the man instructions to remain with him all night, and to fetch me if he became worse. At about 5 next morning he fetched me, saying the horse had begun to be very violent, had bitten him very severely on his shoulder, and held him so tightly that he could not get loose until the other man had beaten the horse off. I now found the patient in a very excited state, worrying so violently at his clothing that we took it off, but not without considerable difficulty and danger, as I thought it (the clothing) might possibly irritate him. We had, however, no sooner taken off the clothing than he commenced to worry his own body, striking violently with his fore-legs against the manger. After a while he seized the manger (which was a good strong one) with his teeth, and tore it out with the greatest ease, and shook it as a dog would shake a rat. As there were two other horses in the stable I had them taken out, and only just in time, for he immediately after broke loose and rushed into the next stall, where he tore out that manger the same as the first. Then he knocked the boarding down which separated the two stalls, and rushed about the stable worrying everything he came near, every now and then stopping to paw with his fore-leg and worrying at it with his teeth.

By this time I had become convinced that I had a case of rabies to deal with, so I advised the owner to have the animal destroyed. Before, however, that was done the owner said that he should like further advice, as the horse

was an old favourite. Mr. Astin, M.R.C.V.S., of this town, was consequently called in, and at once confirmed my opinion.

It is just possible that some of your readers may think that this was a case of phrenitis, but the characteristic symptoms of that disease are dulness, sleepiness in the first stages, and afterwards a wild state, in which the horse is perfectly unconscious as to what he does. Now this horse was preternaturally active, and seemed to go about his work in a thoroughly practical manner, never kicking or plunging, but devoting all his energies to worrying everything he came across. I did not make a *post-mortem* examination for three reasons:—First, as the horse was shot through the head, I could not have examined his brain with any advantage; Secondly, the owner would not send the carcase to the knacker's yard, and I could get no assistance where it was; and, Thirdly, because I had two sores on my hands, and did not wish to run any risk with them.

I have been thus particular about the reasons, as I think it would have been much better if there had been a *post-mortem* examination—at least it would have been more satisfactory. In conclusion I would just say that I could gain no clue whatever to the precise cause of the disease.

HEMIPLEGIA.

By Frederick Adsetts, Veterinary Student.

Thinking the following case may prove interesting to some of the readers of *The Veterinarian*, I venture to place it in your hands for publication.

On the 16th of November Mr. Walters, with whom I am assistant, was requested to see a cart mare, which had lost the use of one side. We were informed by the owner that he thought the animal was suffering from tetanus, as she had been recently shod. We proceeded to the place, and diagnosed the case to be hemiplegia. Symptoms, loss of mobility and partial sensibility of the near side; respiration quick and laboured, thus indicating that the medulla oblongata was implicated in the injury; pulse irregular and feeble; dilatation of pupil; cold perspiration on the surface of the body. We bled freely from the jugular, gave an active dose of physic followed by a sedative mixture, stimulated the loins with a liquid blister, and clothed the body in rugs.

November 17th.—We visited the animal again. We now found her in a comatose state, with almost entire loss of sensibility. The respiration was more oppressed, and the animal was prostrate. An alterative was administered, and two setons inserted in the poll. The animal, however, died on the following day.

Autopsy. — On opening the head we were at once convinced that a blow upon the cranium caused the attack, and that congestion of the brain, more especially of the cerebellum, was the immediate cause of death.

ARMY FARRIERS AND SHOEING SMITHS.

By "Hippogriff," R.H.A., India.

In our former article on this subject, published in last month's issue of *The Veterinarian*, we referred to one or two suggestions that had been submitted to Army Headquarters for the favorable consideration of the Right Honorable the Commander-in-Chief in India.

Though we had persuaded ourselves that the mild propositions would meet with the approval of the Principal Veterinary Surgeon in India, we were not surprised to find that he did not concur in our advice. The statement of the result of his long experience (as given below) shows that we have not erred in pointing out the defects of the system in question, and more than substantiates the remarks we have ventured to communicate. His assertions are of a broader and more conclusive character than those we have ventured to make. We, therefore, consider it very important to adduce his observations—though they do not accord with our suggestions—as corroborative evidence of the views we have declared:

"The result," says the Principal Veterinary Surgeon, "of my experience of the farriers of the army is, that they are generally men entirely without any education, save of a mechanical description, and are, in consequence, incapable of understanding and appreciating even the most rudimentary instruction in the veterinary profession; the simplest language in which such instruction could be conveyed would be a mystery to the majority.

"I believe I am within the truth when I assert that not one half of the shoeing smiths of the British army can read their own language distinctly or write it legibly, and without a good primary education it is impossible to convey sound

technical knowledge to a man. I cannot, therefore, concur in the advice given by '* * *.' I believe that the money spent on the books would be money wasted.

"To have good practical farriers capable of preserving the health and condition of horses, curing their ailments, and thoroughly understanding the foot and shoeing, we must educate them from youth, and we must also be content with their work as farriers, and not try to make them disciplined soldiers."

Pathological Contributions.

ACORN-POISONING.

Several correspondents have answered our inquiries respecting the recent losses from poisoning of young cattle by acorns, and we had hoped to publish in this number of *The Veterinarian* a complete account of the results of the investigations which have been made. The article must, however, be withheld until the issue of the January number, in order to include a record of the experiments which we have instituted, and, we may add, in order also to afford our professional friends an opportunity to forward us further information on the subject. For the present we content ourselves with extracts from the letters which we have received during the past month.

Mr. Alfred Sharp, of Coleshill, Birmingham, sends the following account on November 5th:—

"In last month's *Veterinarian* mention is made of acorn-poisoning among young cattle. In this part of Warwickshire very serious losses have occurred, some owners having lost as many as six and seven cattle each. A few days before marked symptoms of illness appear, the animals begin to lose flesh and look thin, which is soon followed by a dry muzzle, staring coat, arched back, twitching of the flanks, accompanied with a low grunt; the pulse is intermittent, the bowels confined, and in fatal cases about the second day a yellow discharge hangs from the nose, tinged with blood. In the last stage diarrhœa of a most offensive character sets in. The animal generally succumbs to the malady about the fourth or fifth

day. The *post-mortem* appearances are as follows: the rumen and abomasum highly congested, and the greatest part of the mucous lining membrane peeled off; the duodenum, jejunum, and ileum are also much congested, and their serous surface presents a blue appearance. In some cases the kidneys are found almost black and very soft; the gall bladder is filled with thin bile; the liver is healthy; on the heart ecchymosed spots are to be seen here and there."

Another correspondent from Moreton-in-the-Marsh writes:

"I have lost within the last fortnight about eight or nine young cattle, yearlings, and calves, through the acorn disease as it is called, and of which you have doubtless had accounts from other sources. My neighbours also have suffered losses from the same cause. The cattle were taken ill, mostly, after the high winds, when we had a profusion of acorns blown down with their *cups* and *pedicles*. These, being greedily swallowed by the young cattle, who were then short of keep, acted, in *my opinion*, as a poison, acorns by themselves not having any deleterious influence.

"My deer, sheep, pigs, and pheasants thrive on them, and *old* cattle do not suffer."

A third writes from Slough—

"I have lost seven beasts after eating acorns. It would seem that acorns are a wholesome food for beasts as well as sheep; but when a great acorn year occurs, as in this year and in 1868, then disease supervenes in the cow class."

The *post-mortem* appearances are thus reported by Mr. R. G. Verney, M.R.C.V.S., of Blockley:—

"The rumen was full of indigestible matter composed of acorns, short grass, &c. The reticulum was apparently empty. The omasum was enlarged and hard, containing a lot of dry matter. The abomasum contained matter of a fetid character streaked with blood. The whole of the mucous membrane was highly inflamed. Intestines empty, liver congested, kidneys healthy, lungs and heart healthy."

From Epping a correspondent writes—

"I hold the home farm of the Copt Hall Estate, included in which are the parks filled with large old oaks.

"The cattle that have been grazing are some North Wales store steers and the milking cows.

"I have lost four of the steers, and I have one cow very bad.

"All the stock have been removed to where there are no

acorns for the last three weeks. What I have lost has been since then."

A stock owner at Benenden, who lost several animals in 1868 from acorn-poisoning, writes as follows:

"I have not had any bullocks ill from eating acorns this year, as I removed them before the acorns fell in the pastures.

"I have heard of several suffering from this ailment.

"In 1868, when my beasts were ill, and I lost nineteen, the only beast that had no medicine or nourishment recovered. She lost one eye, but in other respects she made a very good animal."

Mr. Ashton, of Sevenoaks, writes:

"In reply to your letter of the 8th, I beg to inform you that I have had several cases of acorn-poisoning, which I have successfully treated when called in early. I have given ant-acids, and had the cattle taken into the yards. I enclose a list of those I made *post-mortem* examinations of. I was not called to these cases until death had taken place. My advice was always to get the cattle out of the paddocks early where the green acorns were falling.

"All the animals affected by this disease were yearlings.

"The following is the list of cases and the localities where they occurred:

	Attacked.	Died.
Seal	12	6
Sevenoaks	20	8
Ditto	30	10
Sundridge	7	5
Chevening	6	1
Chipstead	1	1

Mr. William F. Chattell, veterinary surgeon, of Bromley, writes:

"In answer to your note of the 8th inst., relative to acorn-poisoning in cattle, I have to inform you that I have had fourteen cases occurring in young stock (one to two years old). Five died; the others are well. These animals were very poor, having had little but straw to eat; but after the high winds they collected large quantities of acorns from under the oaks that abound in this district. No adult cattle have been affected. In some cases, where the ailment occurred in 1868, and the acorns have been collected, no disease has taken place.

"I have generally recommended the collecting of acorns as far as possible; the giving of plenty of good food before

the young stock are turned out, with a proportion of crushed acorns. This has answered well.

"The principal harm appears to result from turning the young stock out empty and hungry; they gorge themselves with and swallow the acorns whole, and do not appear capable of rumination, in consequence of the non-admixture of other and longer food. I know of no case of disease occurring where the animals have been turned out into the fields *after* having well satisfied themselves with food in the sheds."

Mr. C. Williamson, of Beaconsfield; Mr. W. Dale, of Stanmore; Mr. C. S. Hirst, of Barnet; Mr. C. Morgan, of Wingham; Mr. F. Earl, of Shifnel; and Mr. H. W. Caton, of Ongar, have also forwarded reports of cases, and given us material assistance in our investigations. We trust, nevertheless, by the middle of the present month to have considerable additions to the evidence which has been already collected.

DEATH OF CATTLE FROM POISONOUS OILCAKE.

Our attention has been called to several cases during the past month in which serious losses have arisen from the feeding of animals on oilcake. The obtainment of a pure, unadulterated linseed cake would appear to be almost unattainable by agriculturists in the present day, notwithstanding the pretensions which are put forth, and the prices which are charged by manufacturers of these articles of cattle diet. The loss of the hay crop, with the limited supply of turnips at the command of meat-producers must necessitate a far greater demand than usual for cattle-feeding compounds; and it is much to be regretted that the same causes will operate as inducements to manufacturers to be even less scrupulous than before in the use of all kinds of stuffs for making of cakes. Chemical analysis will do much, and exposure of cases even more, to check practices of the kind; and we shall be glad to add our feeble efforts to those of others to effect so great a good. In one case brought under our notice fourteen calves out of twenty-one died after partaking of porridge made from "cotton cake," and in another case three bullocks out of seven were killed by eating a compound which contained a quantity of curcas bean. In this latter case the analysis was made by Dr. Voelcker, and in the former an investigation is being made by Professor Tuson.

GLANDERS.

The information received respecting glanders does not show any material difference in the number of cases of the disease; but it is to be remembered that the greatest efforts are made by persons who have glandered horses to keep the matter secret, and that cab-owners are accustomed to work such horses chiefly during the dark hours of the night. In this country, as well as on the Continent, glanders now and then breaks out in a most virulent form, assuming on these occasions all the characters of an epizootic malady. Such an outbreak is reported from the rear of the Prussian army. A letter from Saarbrück, published in the *Mannheim Zeitung*, after alluding to a decrease of the rinderpest, says that "another pestilence has shown itself, viz., glanders among horses. Against this plague also, equally dangerous to men and horses, the Prussian Government have taken the greatest precautions. The horses are daily inspected, the infected are slaughtered, and the persons who have been in contact with them are subjected to quarantine and disinfection. All the stables and harness of the killed horses are likewise disinfected."

FOOT AND MOUTH DISEASE.

At the date of our report for the month of October, fifty-three counties in Great Britain were returned as having 3·092 centres of infection of this disease, while at the corresponding date for November we find that, although reports have been received from fifty-four counties, the centres of the malady have been lessened by 248. This diminution affords encouragement for hoping that the malady is again on the wane. We should have a much stronger ground of hope, however, if it were found that the local authority was equally energetic in the adoption of preventive means in all parts of the country; but unfortunately it still happens that in many the police have all power as inspectors, and that in numerous cases cattle in the very crisis of the affection have been allowed to enter and depart from fairs and markets without any attempt being made to stop so illegal and dangerous a practice.

At the Warwickshire Quarter Sessions, the question of an increase of pay to the police came before the magistrates, and in the course of the discussion which followed Mr. Darlington

is reported to have said that in other counties the police had extra duties imposed upon them, which accounted for the higher rates of pay they received. In Staffordshire, for instance, they acted acted as inspectors under the Cattle Diseases (Animals) Act, 1869, thereby saving the county considerable expense. This charge was very heavy in some parts of Warwickshire. In the Coleshill division the bills of two inspectors amounted to between £200 and £300 for the year. He suggested that this duty should be handed over to the police.

Mr. Caldecott, in reply, deprecated any change in the existing arrangements, particularly at the present time, when pure cattle disease was raging on the Continent.

Mr. C. N. Newdegate, M.P., entertained a similar view upon the subject, but mentioned, as a matter worth consideration, the relationship which ought to exist between the police and the veterinary inspectors. The police could be of great service and diminish expense by reporting to the inspectors any case of outbreak occurring in the district. It would not, however, be prudent for the county to discontinue the services of a class of men who, by their experience and education, were fitted not only to combat the disease, but also to detect premonitory symptoms.

It was eventually decided to adopt the report for increase of pay, and not to interfere with the existing arrangements for dealing with the cattle disease.

CATTLE PLAGUE.

It appears that the measures had recourse to for the extermination of the cattle plague have sufficed to free several of the German states of the malady; but in others it continues to prevail, and in some has reappeared. Prussia, the Grand Duchy of Mecklenburg, and Saxony, where the plague had broken out afresh, are, according to the latest intelligence, once more free of the disease. East Prussia is, however, still threatened by a fresh invasion from the contiguous Russian States, and also from Poland. We have distinct information of its existence in the district of Riga, while Poland may be fairly said to be overrun with it, as is also the case with Galicia and Buckowina. For many months past Transylvania has been suffering to a great extent, and it is now reported that the disease has been reintroduced into Hungary. The Palatinate of Bavaria is

said to be tolerably free; but in the north-eastern departments of France the plague is so firmly established that, under existing circumstances, little hope can be entertained of its early suppression. In Lorraine upwards of eighty places are centres of the infection, besides numerous others in the valleys of the Meuse and the Moselle. In one case twenty-one animals only were left out of 211, and in another thirty out of 300. Both Belgium and Holland are continuing to adopt stringent measures of precaution against the introduction of the malady. The danger, especially to the first named, must be considered as being great.

PLEURO-PNEUMONIA.

We have to report a slight decrease in the number of places in which pleuro-pneumonia now exists compared with last month. Twenty counties of England and nine of Scotland are, however, still the seat of the malady. In the metropolis there are very many cases of the disease, and some of the dairymen are adopting the plan of clearing out all their old stock upon the occurrence of a case by sending the animals to the butcher, and not making new purchases from the country until their premises had been thoroughly disinfected.

SMALLPOX OF SHEEP.

There are good reasons for believing that the smallpox of sheep is much more diffused in northern Europe than would be concluded from the vague reports which reach this country. It is admitted that the disease has shown itself in several fresh places in Pomerania, and, as was pointed out in our last month's issue, already we have had proof of its existence near to Hamburg, an infected cargo having come here from that place. Now that the trade in German sheep is about to become more active the greatest vigilance will have to be observed by the Customs inspectors at the several outports, as well as in London. Fortunately, however, all sheep exported from the German ports, as well as from France, have now to be killed at the place of debarkation, by which means we may hope to escape another outbreak of the disease.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of October, 1870, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Cherbourg	Southampton	Foot-and-Mouth	...	...	...	258	258	258
Hamburg .	London	Sheep-pox	...	1	..	...	1	1
Total			...	1	...	258	259	259

"ALEXANDER WILLIAMS,

"Privy Council Office, Secretary.

"Veterinary Department, 14th November, 1870."

Facts and Observations.

ARE THE TWO SIDES OF THE BRAIN ALIKE? — Dr. Brown-Séquard thinks not. In the course of his remarks, at the British Association at Liverpool, he said that the series of experiments he had made upon different animals led him to the belief that the right side of the brain was more important for organic life than the left side. Although the two sides of the brain were precisely alike when the animals were born, by greater development of the activities one side came to be quite different from the other.—*Popular Science Review.*

The Effect of Artificial Light on the Eyes.—The *Chemical News* takes the following interesting paper from *Les Mondes*. It is by M. V. Meunier. The author states that the great difference between sun and artificial light is due to the fact that, of the light emitted from the former, about half the quantity of rays are luminous and calorific at the same time; but, as regards our artificial light, for ordinary oil (colza oil), the amount of non-luminous, yet calorific, rays is 90 per cent.; for white-hot platinum, 98 per cent.; alcohol flame, 99 per cent.; electric light, 80, and gas light, 90 per cent.; while for petroleum and paraffin oils, the amount is 94 per cent. It is this large quantity of caloric rays in artificial light which causes the fatigue to the eyes; but this inconvenience may, according to the author, be almost entirely obviated by intercepting the thermic rays by glass, or, better yet, mica plates. The use of these renders the light soft and agreeable to the eyes.

Further Researches on Cotton Respirators.—Dr. Jouglet has been experimenting on the use of cotton respirators, and states that, by their application, the disease known as miner's anæmia, and also the dangers of the effects of lead, copper, and mercury, to those who have to handle these metals, or work in vapours or dust thereof, may be prevented.—*Comptes-rendus.*

New Purifying Agent.—M. Marix has taken, in France, a patent for the application of fluosilicic acid for the purifying of beetroot and other saccharine juices. The saccharine juices are first diluted with a sufficient quantity of water, to take away the viscosity of these fluids, sufficient fluosilicic acid is then added to precipitate all the potassium salts present; and next, chalk is added to saturate any excess of the acid. The fluid is then filtered, in order to obtain a clear liquid, and this is afterwards treated in the usual manner.—*Journal of the Society of Arts.*

Iodine.—Professor Wagner, in his reports, says that the manufacture of iodine from Chili saltpetre already amounts to 30,000lb. per annum. The method invented by Thiercelin for its reclamation from the crude material is as follows:—The mother liquors resulting from the manufacture of saltpetre are treated with a mixture of sulphurous acid and sulphite of soda, in proper proportion, and the iodine will be precipitated as a black powder. The precipitated iodine is put into earthen jars, on the bottom of which are layers of quartz sand, fine at the top and coarse at the bottom; from

this it is removed by earthen spoons into boxes lined with gypsum, and a greater part of the water thus removed. It is sometimes sold in this impure state, or further purified by sublimation.—*Ibid.*

New Foreign Cattle Market.—The Corporation of London having decided, in Common Council assembled to purchase the site of Deptford dockyard for the landing, lairage and slaughter of foreign cattle, brought from scheduled countries under the provisions of the "Contagious Diseases (Animals) Act," referred the matter to the Corn, Coal, and Finance Committee to consider the means of carrying the resolution into effect. On the 17th ult. the Committee brought up its report, recommending that the sum of £160,000 be appropriated for the purchase of the site and the erection of proper buildings, landing pier, &c. The report was agreed to, and referred back to the Committee for execution.

Effects of the Siege of Paris on the Consumption of Horse Flesh.—The necessities of the time have caused great activity in the horse market of Paris. The market was usually held on Wednesdays and Saturdays on the Boulevard d'Enfer, but since the commencement of the siege it has been decided that Mondays, Tuesdays, and Fridays shall be additional market days for the sale of horses intended for slaughter. Upon these days the show of horses is now very large, and a Government commission attends to examine the animals exposed for sale and brands those which it deems fit for human food. The ordinary weight of a living horse is from 400 to 450 kilogrammes, and the selling value is from 40 to 50 centimes the kilogramme. Asses and mules are also sold in the market and are in great demand. Young asses are eagerly sought for, and bring 75 centimes per kilogramme of the living animal.

At a horseflesh depôt in the Rue de la Roquette, notice was recently given, that "horsemeat of first quality was on sale from the stables of Comte de la Grange."—*Times.*

Sale of Cats and Dogs for Food.—On the Boulevard Rochechouart is a butcher's shop where cats and dogs are sold for food. The animals for sale are hung up in front of the shop, adorned with wreaths of foliage. The mobiles of the Loiret, who are encamped on the boulevard, buy a good many of them for their daily meal.—*Pall Mall Gazette.*

The Contamination of Water by Sewage.—Some important experiments on water contaminated with sewage

have been made by Mr. Charles Heisch, the bearing of which is to simplify very much its qualitative analysis. A manufacturer of lemonade, finding suddenly that he could not keep his beverage more than a day or two, and unable to understand the reason of this, called in the aid of Mr. Heisch. The mischief was traced to the water, and it was afterwards discovered that an almost inappreciable quantity of drainage had reached the well which was being used. Following up this clue, Mr. Heisch believes he has discovered a method whereby sewage, almost in the smallest possible quantity, may be traced in water. Six drops of clear sewage were mixed with 10,000 grains (rather more than a pint) of West Middlesex and New River water. To six ounces of this mixture ten grains of pure sugar were added. The same quantity of sugar was also added to six ounces of water without any sewage. In from twenty-four to sixty hours the first mixture became turbid, and revealed in the microscope certain forms of cells, grouped in a manner which Mr. Heisch regards as characteristic. The water without sewage remained clear and sweet. One drop of fresh urine in 10,000 grains of water yields a mixture which will keep for several weeks, but the addition of sugar will induce the appearance of these cells in from twenty-four to forty-eight hours. Mr. Heisch states that filtering through the finest Swedish paper did not remove the germs, nor was boiling for half an hour any more effectual. Filtration through charcoal seems alone to have been found capable of removing the impurity.—*Journal of the Society of Arts.*

A Test for Water in Milk.—It is, as is well known, a remarkably difficult matter to detect water in milk, so as to say for certain that it has been added. A test which appears likely has been devised by Dr. A. E. Davies, F.C.S. Such a test, he believes, we have in the specific gravity of the serum, or liquid portion of the milk, from which the caseine and fat have been removed by coagulating and straining. The gravity of this liquid he has found to be remarkably constant, ranging, in that obtained from genuine milk, from 1·026 to 1·028; and, by carefully ascertaining the specific gravity of the serum of genuine milk diluted with various quantities of water, we may obtain a standard of comparison which will enable us to say, within a few per cents., what quantity of water has been added to any sample of milk that may come under our notice.—*Chemical News.*

The First and Second Stages of Labour.—In regard to this point, a very able paper was contributed to the

Royal Society by the Rev. Samuel Haughton, F.R.S. In the first stage of natural labour the involuntary muscles of the uterus contract upon the fluid contents of this organ, and possess sufficient force to dilate the mouth of the womb, and generally to rupture the membranes; and he endeavours to to show, from the principles of muscular action already laid down, that the uterine muscles are sufficient and not much more than sufficient, to complete the first stage of labour, and that they do not possess an amount of force adequate to rupture, in any case, the uterine wall itself. In the second stage of labour the irritation of the fœtal head upon the wall of the vagina provokes the reflex action of the voluntary abdominal muscles, which aid powerfully the uterine muscles to complete the second stage by expelling the fœtus. The amount of available additional force given out by the abdominal muscles admits of calculation, and will be found much greater than the force produced by the involuntary contractions of the womb itself.—*Popular Science Review.*

Increase in Temperature of the Pulse. — Dr. Rattray has contributed a very valuable paper on this important subject to the 'Proceedings of the Royal Society,' from which we take the following :—

	Temperate climate (near England), June, T. 65° F., average of 10 days.	Tropics generally, average of 51 days.	Equator, T. 84° F., average of 7 days.
9 a.m. . .	91.1 98·1	98·51	98·5
3 p.m. . .	91.3 98·3	99·	99·5
9 p.m. . .	91.5 98·5	98·47	99·1
Average .	91.3 98·3	98·66	99·02

While observation thus showed that the average temperature of the body about the latitude of England is 91·3° F., the following Table shows that it rises in the tropics to 98½-99-99½, and occasionally even to 100° F. This fact is interesting, if not important, in connection with temperatures in disease; and the mutual relation of the two is worth study.—*Ibid.*

THE VETERINARIAN, DECEMBER 1, 1870.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

THE TRANSIT OF ANIMALS BY SEA.

Recent experience has convinced us of the impossibility of meeting the demands of sensitive people in reference to the amelioration of the hardships which seaborne cattle and other animals are doomed to suffer. By degrees all the vessels which are employed in the cattle trade are being fitted up in conformity with the Order of Council of May 12th, which provides that places used for animals on board vessels shall be divided into pens of a convenient size, with sufficient footholds, and also that proper ventilation shall be secured if the place is enclosed. Freshly shorn sheep are not to be carried on the deck of a vessel during the inclement season of the year. Gangways are to be provided, either betwen the pens or above them; and all vessels are to be properly cleansed and disinfected after the close of each voyage. Food and water are to be supplied at all places where animals are shipped or unshipped, and proper provision is to be made at landing places for the convenient unshipment of them. In the majority of cases all the above essential arrangements for the comfort of animals have been carried out; still we are reminded occasionally by a letter from some humane individual that the pathway from the pasture to the slaughter-house is not so smooth as it might be. Complaints of dire cruelty are yet uttered; and propositions are tendered by well-meaning people who labour under the trifling disqualification of total ignorance of every phase of the subject upon which they feel it their duty to write.

In order to escape a suspicion of indifference to animal suffering, we at once assert our desire to assist in every possible way all practicable reforms in the methods of conveying animals to their final destination by sea or land; but

when a suggestion is publicly advanced, to arrange for the carriage of cattle, sheep, and pigs in the same way as for horses, that is to say, that each animal shall have a separate padded stall on board ship or in the railway van, we are constrained to tell the enthusiastic proposer that the thing is utterly beyond the scope of our present means. There is no doubt, indeed never has been any, of the possibility of carrying animals in perfect comfort. If an exhibitor wishes to transmit a valuable bull or cow to a cattle show, he commonly hires a horse-box for the purpose, and pays for it as he would for the conveyance of one of his hunters. An attendant accompanies the beast all the way and carefully attends to its wants, fearful lest a short abstinence from its accustomed food should be detrimental to its appearance and diminish its chance of a prize ; but if half a dozen fat oxen or a dozen steers are to be sent to a distant fair, the farmer is content to cram them into a truck, and start them off unattended, leaving it to the Fates to determine whether they shall fast on the road or by some happy chance find refreshment.

Valuable cattle and sheep can be transmitted in comfort and security to Australia or New Zealand, so that the number does not reach beyond units, but if for units we have to read hundreds and thousands, the difficulty of transit is proportionably increased. Given that two or three thousand cattle, as many pigs, and ten or twelve thousand sheep are to be sent from the Continent to England in one week, what becomes of the separate padded stalls for each animal? Setting the money question on one side there are not ships enough in the trade to convey half the required number of animals to our shores, if provision had to be made for the comfort and security of each individual.

Upon the subject of overcrowding of animals on board ship, great misunderstanding prevails among uninformed persons. The fact is, the greatest amount of mischief always occurs when animals are too loosely congregated; something approximating to close packing, however unpleasant the phrase may sound, is absolutely necessary for their safety; and the great advantage of pens on board ship

is the facility which they afford for properly packing a small cargo of animals in a vessel which is capable of accommodating a large number.

Instances of the employment of unnecessary violence in getting animals off the ship, or the infliction of pain in mere wantonness, enormities of which we have read, but which it has seldom or never come within our province to witness, can only be dealt with as they arise; and the suggestion which was made by a writer in a daily paper a fortnight ago, to appoint an officer of the Humane Society to attend every landing place, in order to exercise some wholesome supervision over the men engaged in the work of landing animals is a good one, although its adoption would involve considerable outlay.

A great deal has been done, and much more is being attempted, to lessen the hardships of the sea voyage, but it is hopeless to expect that cattle and sheep, or, for that matter, men and women, can be rendered proof against the miseries of a rough passage. The cost of transit again is a serious element in the calculation, even when human beings are concerned; in the case of oxen and sheep it is invariably a thing of the last importance. If people must live on beef, mutton, and pork at something under a shilling a pound, it will be useless to suggest improvements in the methods of conveyance involving the bringing of fewer live animals to this country or, what is the same thing, increasing the cost of transit. If our argument seem to bear the appearance of an apology for the infliction of pain on the plea that people must eat meat, we must accept the consequences, even should they take the form of the cruelly cold retort of the French judge, who when the criminal endeavoured to excuse himself on the ground *il faut vivre,* bitterly replied, *Je ne voit pas la necessité.*

Extracts from British and Foreign Journals.

THE BREEDING OF STOCK.

By W. C. Spooner, M.R.C.V.S., &c., &c.

(A Lecture delivered before the Blandford Farmers' Club, Oct., 8th, 1870.)

The first lecture for the season 1870-71, in connection with this club, was given on Saturday evening, Oct. 8th, at the Crown Hotel, by Mr. Spooner, of Eling, near Southampton, on "The Principles involved in the Breeding of Stock." There was a very good attendance of members.

The lecturer having been suitably introduced by the chairman, at once commenced his subject:—

Throughout the whole range of Creation there is nothing perhaps which strikes the mind of the student of Nature with greater force than the wonderful provision made for the preservation and sustentation of animal life. There is no spot so barren but what some vegetation appears, and wherever this is the case, animal life in some form corresponds with the supply of food. Provision is made for maintaining and augmenting the species far beyond the supply of food, and thus the struggle of life goes on, the weakest go to the wall, and the strongest propagate their kind. This phenomenon has been termed by Mr. Darwin "natural selection," which term, however, does not carry with it its own solution, but demands some little explanation. Not only is the surface of the earth instinct with animal existence, but even the very air we breathe is full of the germs of animal or vegetable life, ever ready and ever seeking the proper nidus to enable them to increase and multiply. The theory of spontaneous generation, which has been so long and so vigorously maintained, and which from time to time appeared to be supported by phenomena which could scarcely be disputed, and could not well be otherwise explained, has at length received its quietus, and has yielded to the facts developed by modern research, and the old doctrine, "Omne ex ovo," has been proved to be sound. Decaying substances are soon peopled with animal life, but this does not take place provided all contact with external air is prevented; nor does it result if the air to which it is exposed has been first deprived of all its germs by means of fire. Mr. Spooner then proceeded, in illustration, to give several examples of

the way insect life was propagated, and remarked that it would appear as if the same scientific truths which modern discoveries had brought to light were believed in without such absolute proof years ago; for Hudibras wrote:

> "Great fleas have little fleas
> Upon their backs to bite 'em;
> And little fleas have lesser ones,
> So on, 'ad infinitum.'"

"Like begets like" is an axiom that cannot be disputed, and examples are continually met with, showing how types are handed down from father to son, and from generation to generation, and yet, as propagation is effected by parents very dissimilar from each other, there are causes in operation which result quite as much in diversifying the race as in handing down the types from one age to another; so that we may be probably correct in saying that no single individual is the precise counterpart of one gone before. What then is this vital union? or rather, what is it not? It is not then a merely mechanical union like the combination of spirit and water, or the composition of the atmospheric air. It is not chemical union which, by the combination of two substances, produces a body totally different from either of the elementary bodies, such for example as water—the product of the combination of two gases, oxygen and hydrogen. Vital union is probably partly mechanical and slightly analogous to chemical union, but differing materially from either, undoubtedly *sui generis*. Each parent possesses certain peculiarities, but by no means in equal proportions, and there are no fixed rules enabling us to judge precisely what the effect will be of certain combinations, but yet there are certain truths, or rules, although abounding with exceptions, which careful observation has detected and recorded. Of these the first in importance is the influence exercised by either parent on the offspring. When the influence of one is greater than the other the term prepotency is used to denote the superior influence. And although this prepotency may belong to either parent, yet in the majority of instances, so far as external form goes, it belongs to the male. This is partly owing to the fact that the vital functions, the internal frame, and the cerebral and nervous systems, which are unseen, more frequently follow the female, whilst the more visible features, such as the external form, the skin, the back, and hind quarters, the size and general shape is generally influenced by the male parent. Sometimes the very opposite is the case, and then the female is said to be prepotent. Illus-

trations of the truth of the above remarks were then given by the lecturer, in cases where the male animal was superior in size and weight to the female, in horses and sheep of different breeds, in cattle, and the Manx cat. In the human race a tall family was often the progeny of a tall husband and short wife. Sometimes the opposite alliance produced the same result, and sometimes part of the family were tall and the other part short, but it is scarcely ever the case that a mean or average size resulted from the union of parents of opposite statures. That the constitution, temper, and mental condition more frequently follows the female parent is generally acknowledged, and it is considered as essential to the production of a clever family that the mother should be distinguished by mental gifts. It is well worthy of notice the astonishing manner in which peculiarities and predispositions to disease are propagated, although such predisposition may not manifest itself till a good portion of a life time is passed away. An hereditary disease or peculiarity appears perhaps at about the age of fifty, and not before, and yet the germ of predisposition inherited from the parent must have existed all this period. The lecturer then proceeded to speak on Reversion, a term which, he remarked, was given to that well-known phenomenon of certain peculiarities disappearing in one generation and reappearing in the next, or subsequently. It was the fact that, with animals when the first cross had proved eminently successful, a continuation of the cross-bred animals has by means of reversion caused all sorts of incongruous results to crop out, so as greatly to disgust the would-be improver. So strongly has this been felt by many breeders that they have condemned crossing altogether except for purposes of the butcher, or confined to the first cross. Indeed, at one time this was the leading doctrine of the most prominent men belonging to our Agricultural Societies, who clung with superstitious tenacity to the doctrine of purity of blood, believing it to be the ark in which alone true safety was to be found. Time was when prizes were only given to three breeds of sheep supposed to be pure. Now what do we see? Improved Hampshire Downs, Shropshires, New Oxfordshires, and others, all from cross-bred parentage, but now recognised as distinct breeds, and all considered worthy of prizes and of encouragement. These breeds may be considered as the successful results of crossing, scientifically and practically carried out, and although, no doubt, contemporaneously with these successful examples many others have been made which have ended in failure, yet we cannot shut our eyes to the fact that new and distinct

breeds have been thus created, and have been so perfected by rigorous weeding that they require no further crossing, but only careful selection, and may now justly take rank as distinct breeds. Although there was no reason to doubt that the South Down is a pure breed greatly improved by selection, yet the Leicester breed was raised by crossing in the first place. Mr. Spooner then proceeded to speak on the history of the different breeds of sheep, and showed that it was as essential to have the best and purest parentage on the one side as the other. The Hampshire and Wiltshire Downs originally were large bony uncouth sheep, with horns, which latter was got rid of by means of Sussex rams, but still remained a very useful though coarse sheep, till Mr. Humphrey commenced his improvement some thirty years ago by means of two of Mr. Jonas Webb's prize South Down rams, from which were descended all the rams he afterwards used or let, although he replenished his flock and maintained his size by occasional purchases of ewes. This improvement has been carried out with the greatest success by Mr. James Rawlence and others. The Oxfordshire breed is the result of the cross of the Cotswold ram with the Hampshire Down ewe. The Shropshire is indebted to both South Down and Leicester for the improved breed of sheep recognised under this name. Thus, without disparaging the efforts of those who have devoted their attention to the improvement of pure breeds, some of whom he was glad to see present this evening, whose exertions were worthy of the highest praise, yet all must acknowledge the great success that has attended the establishment of the breeds he had mentioned. Indeed, he considered that more skill and more science had been shown by the breeders of sheep than by the breeders of any other kind of animals. A certain want had been felt, and breeders set about to supply the want, whether it was greater size, earlier maturity, or larger or finer wool; and when the want was supplied and the breed established, further crossing has, for the most part, been discontinued. The Royal Agricultural Society, not leading, but falling in with the improvement, greatly aided and extended the movement. But whilst this was the case with sheep it was far otherwise with horses. With the exception of cart horses, the breed of which had certainly been greatly improved by the encouragement given by the Royal and other societies, he considered that other useful breeds would have been better if these societies had never existed; but to this he would refer again before he concluded. Crossing had been adopted with great success with pigs, for, although certain

distinct breeds had long been known, such as the Berkshire, Yorkshire, and Sussex, yet it would be somewhat difficult to give a correct nomenclature to all the different breeds. The Royal Society have long since fallen back on the distinction of "large and small," "white and black" pigs. It would almost appear that the rule with regard to pigs must have been derived from Shakespeare, who in 'Macbeth,' in the incantation of the witches, says:

"Bubble, bubble, toil and trouble.
Fire burn and cauldron bubble.
Black spirits and white,
Blue spirits and grey,
Mingle, mingle, mingle,
Ye that mingle may."

So with pigs it may be said to have been:

Black pigs and white,
Blue pigs and grey,
Mingle, mingle, mingle,
Ye that mingle may.

(laughter). In and in-breeding had been more successful with horned cattle than with any other animals, and with the Shorthorns it appeared to have been followed out without those objectionable results which were often considered to attend the practice. These objections were a disposition to barrenness, a want of vigour, and the increase of those diseases to which the parents are mostly liable. In the human subject it was considered, and with good reason—that the alliance of near relations was conducive to scrofula, insanity, and barrenness. The truth appeared to be that certain diseases and peculiarities were hereditary in particular families, which by alliance with relations became two-fold increased, whilst by alliance with other families not liable to such diseases, there was a fair chance of the defects in question being crossed out. With cattle, and with shorthorn cattle more particularly, by employing healthy parents, possessing great excellency, and few if any defects, the benefit of the latter have been kept up without the evils which have so frequently followed the practice, and thus we have the celebrated Duchess and other families handed down in unrivalled perfection. In no breed of animals have the females been so highly estimated, which is shown by the remarkable sums given for the best cows at the leading sales. One interesting fact is well illustrated in the breeding of cattle, viz. the power of transmitting the milking, or female, qualities by means of the male, which must, therefore, have possessed the germs of those qualities belonging to the

opposite sex. This was well shown by the Alderney bull, which was as important as the cow in transmitting rich milking qualities. Mr. Spooner thought, however, that it was rather to be regretted that in giving premiums for cattle more attention had not been paid to the milking qualifications, but the purposes of the butcher had alone been regarded. Thus, while some of the old milking breeds have almost died out, their places have been supplied by cross-bred and mongrel animals to a very large extent, it being considered in many instances that for dairy purposes pure-bred animals were not so profitable, more particularly on moderate pastures.

With regard to horses, all must agree that the difficulty of suitably mounting a welter weight is greater than ever, and it is also an acknowledged fact that it is more difficult than ever to provide remounts for the cavalry and artillery. Why should this be the case, when it is well known that a good animal costs no more to keep or to rear than a bad one, and that such vast sums have been expended in breeding from thorough-bred horses? He well remembered the horses that used to be cast and sold out of the cavalry and artillery some thirty years ago, and how immeasurably inferior were the cast horses of the present day. He had occasion to look over a lot of horses thus cast a very few years since, and there was not one in twenty but what was faulty in structure, or had some hereditary defects. Why was this the case, but because it had become at first the convenience, and then the custom, to use broken-down race horses alone for stallions for getting saddle horses, which fashion the Royal and other agricultural societies instead of opposing had done their utmost to encourage. A certain few had set themselves up as law makers in this respect, and in total abnegation of the principles of science and physiology, except such as were derived from the training stable, they have ventured to proclaim certain dogmas which others have been weak enough to regard like the laws of the Medes and Persians. These dogmas were—that pure blood must be had one side, and that side the male, and that thorough-bred horses alone possessed it. But to this he replied, 1st, that by using thorough-bred horses for successive years, in the course of ten generations they would have only about one thousandth part of the original breed left, from which they derived their bone and substance, their constitution and digestive organs. 2nd. That the female was as important as the male in breeding. 3rd. That principles that had proved so successful with sheep and other animals, would prove equally successful with horses. Thus after trying to

get superior horses, in a few generations the animals became weedy and degenerated, and we were obliged to begin again, starting, perhaps, from the plough tail. He had no wish to underrate the good qualities of blood horses, but freely acknowledged that no other in the universe possessed so much stride, speed and endurance, or could make such extraordinary efforts, or whose nervous and vital systems were more wonderfully developed, or could better transmit their good qualities; but at the same time they were bad doers, were narrow and small in the carcase, and deficient in bone, required large quantities of the most nutritious food, and were, from their thin skin, very susceptible of cold, and incapable of standing the rough treatment and rigors of a campaign. The original parents, Barbs and Arabs, first introduced in the reigns of James and Charles, were small animals, about fourteen hands, and the size of their descendants has been obtained by high feeding from their earliest days. There is thus a perpetual tendency to reversion, particularly when excessive feeding is not adopted. He would, therefore, in conclusion, with a view to remedy these evils, suggest the following plans:—In consequence of the discouragement hitherto given by the leading societies, it would not pay private individuals or companies to establish any scheme for the improvement of ordinary saddle horses, it must be done by the Government, or the aid of the State; and first he recommended the doing away with Queen's plates, which, however useful in past days for improving the breed of horses, were no longer of any utility. The Turf, he thought, could take care of itself, and the money might be devoted to a national purpose, viz., to prizes for the breeding of cavalry and other useful horses. Secondly, Government Stud Farms should be established, not so much for the breeding of weight-carrying hunters and cavalry horses as for the breeding of horses and mares calculated to produce them. Hampton Court might well lead the way in this respect. It would be far better than keeping it up to play second fiddle to Mr. Blenkiron. There might also be half-a-dozen other Government studs in suitable parts, and the loss on these farms would be but little, and would soon be repaid by the better supply and cheaper cost of good, sound, and valuable horses, many of which would make first-class hunters, and others valuable horses for cavalry, artillery, and harness purposes. All faulty animals should of course be weeded out annually. The greater part of the mares might be sold in foal, and the best of the young horses as stallions. He verily believed if some such plan were adopted, in a few years they would be

able to mount the cavalry as they ought to be mounted, and supply the country with valuable horses for all purposes, in place of the worthless weeds that now abounded. The stud farms in different parts of the country, to accomplish the ends in view, should be furnished with at least—

1st. One thoroughbred stallion, the most calculated to get weight-carrying hunters and saddle horses, with suitable mares.

2nd. One seven-eighths-bred stallion ditto.

3rd. One or more three-fourths-bred stallion.

4th. One or more half-bred ditto.

These stallions to be available for the neighbouring farmers, as well as for the stud farm.

5. Mares, young and fresh, with size, substance, shape, and action (a few of which can still be obtained), but without pedigree, for alliance with stallions Nos. 1 and 2.

6. Mares with the above qualities, but possesing one-fourth blood, that is, descended from a thorough-bred grandsire, and fit for alliance with stallions of Class 1, 2, and 3.

7. Mares with above qualities, and possessing one-half blood, suited for stallions 1, 2, and 3.

8. Mares possessing three-fourths and seven eighths blood, of proved excellence, and suited for stallions 3 and 4.

Mr. Spooner concluded by thanking the company for their patient attention to his remarks. The subject was one with many different bearings, but time would not allow him to go into many other interesting particulars.

PRACTICAL PHYSIOLOGY.

The recent regulations of the College of Surgeons having required of students now entering upon their medical studies attendance upon a course of Practical Physiology during their second year, we have thought it well to inquire as to the mode in which the course is to be carried out, and have for this purpose visited University College, where there has been for some years a regular course of Practical Physiology, to which manystudents have entered, although the course was not compulsory. Professor Burdon-Sanderson, who has been recently appointed to the chair of Practical Physiology in succession to Professor Foster, informs us that though the course is not compulsory upon those students now in their second year, yet that so large an entry has taken place that he has been

obliged to arrange to give instruction to two classes who do duplicate work at different hours. Two hours and a half are allotted to the meeting of each class, which is held in a special physiological laboratory, doubtless to be hereafter known as the "Sharpey Physiological Laboratory," when the arrangements connected with the Sharpey Memorial shall have been fully carried out. This room has been fitted with a long table, adapted for the microscope of the class, and with supplementary tables fitted with gas and water-supply for the chemical operation, a "stink closet," &c., suitable for the work intended.

The intention is that each student should prepare for himself *seriatim* the several structures of the body, and submit them to microscopic examination, showing by his own sketches, made at the time, that he clearly apprehends the subject in hand. Then, that each student should test for himself the various fluids of the body, and investigate the chemical changes which take place in the processes of digestion, respiration, &c. In addition to this, at each meeting, the professor himself conducts before the class some three or four experiments requiring delicacy of manipulation and experience, and therefore not capable of being entrusted to individual pupils. We may give as examples the experiments made at the last meetings of the class. 1. The method of subjecting living tissues or cells to the action of gases while they are examined under the microscope, and in particular the changes in the appearance of the coloured blood-corpuscles, when they are subjected alternately to the action of carbonic acid and of oxygen. 2. The method of subjecting living tissues or cells to the action of the induced electric currents (faradisation) when under the microscope, as illustrated by the effects of such currents in discharging the colouring matter of the red blood-corpuscles, and in suspending the amœboid movements of the white ones. 3. The effect of chloroform on the blood-corpuscles. 4. The mode of examining under the microscope living tissues of mammalian animals at the temperature of the body, &c.

It is obvious that such a course of instruction, which will doubtless be more or less imitated at all our medical schools, will afford the student a knowledge of physiology very different from that acquired by attendance on theoretical lectures and by reading only. We give all credit to the College of Surgeons for having required such a course as a part of the ordinary curriculum, and hope that this system of teaching will shortly render impossible such comments as those made by Professor Huxley upon "the singular unreality of

knowledge of physiology" evinced by even the best-instructed students.—*Lancet.*

CINCHONA CULTIVATION IN INDIA.

Amongst the services which the Indian Government are rendering, not only to the population of India, but to the whole civilised world, is the successful cultivation of the quinqueno tree. The collection of the different varieties from amongst the forests of the Andes, their temporary removal to the Royal Gardens at Kew, and subsequent transference to the Neilgherry Hills, where a site had been selected by the botanists, forms the earlier stage of the proceedings. The narrative of these interesting operations, which commenced in the year 1859, is given in Mr. Markham's 'Travels in Peru,' and the blue-books of the India Department. The report just published, extending over the later period down to the present time, puts us in possession of the correspondence between the Secretaries of State and the Governors of Madras and Bombay, the records of the proceedings of the officers and managers, general views of progress at various intervals, combined with other subsidiary matters, all showing the importance attached to this experiment.

The opening dispatch, dated 16th June, 1866, from the India Office, states the object which the authorities had chiefly in view, viz., the maintenance of the gardens at Ootacamund until their produce could be generally diffused and rendered accessible to the greatest possible number of the poorer inhabitants of the country. The officers of different ranks were instructed to make known the uses of the bark, and, where practicable, to promote the cultivation of the tree by villagers and small holders of land in suitable situations, even if they should not be able to do more than plant a few trees around their houses; that in all cases, where the cultivation should be undertaken for purposes of trade or profit, a charge be made for the plants; but amongst the lower classes a supply should be gratuitously furnished, and every other assistance afforded them in the prosecution of the work; that an experienced chemist or analyzer should be appointed to investigate the various points connected with the extraction and the use of alkaloids, and to promote the establishment of a manufactory of quinine and of the inferior products of the cinchona. How far these instructions were

carried out, during the time which intervened between the date of this letter and the last account of the gardens, 25th July, 1870, appears from the perusal of the correspondence, and the reports of the botanists and managers of the property.

The total number of plants growing in the gardens 31st March, 1868, was 2,353,370, against 1,926,044 as compared with the previous year. The number distributed to the public made a total, up to that time, of 170,470. The first plants permanently planted out in August and September, 1862, had attained heights varying from 17 to 18 feet, the larger kinds having been cut down for the bark, to be sent to the European market. These plants began to show their tree-like character, and, together with those planted in 1863 and 1864, were then yielding an abundance of excellent seeds, of third, second, and first crops, according to the age of the trees. With regard to the period required to produce bark, Mr. M'Ivir, the manager, had definitely fixed it at four to six years, at which age the trees on the Neilgherries had commenced to yield a small harvest, the quantity being found to equal that of the finest Peruvian bark. The demand for seeds had been very great, and the 'Notes on Cinchona Cultivation' had enabled the private planters to raise the seeds successfully. The public sales of bark had realised very satisfactory prices, ranging higher than those obtained for them as a description of American bark. A wide field seemed, therefore, opened for enterprising capitalists, since the best kinds would, without doubt, be cultivated with certainty over the whole plateau of the Neilgherries, and that, too, on grass land, where the preparation required but a small outlay of capital. As a private speculation, the cultivation was gaining ground, and several fine estates were progressing rapidly. It was also gratifying to the authorities to observe the readiness with which planters, both European and native, were disposed to undertake the cultivation in connection with coffee plantations. During the year, 198 acres additional had been planted, making a total of 1,093 acres under the management of the government, and the whole executed at a cost from the commencement of 432,367 rupees.

An analysis of the bark sent by Mr. Howard, 1868-9, gave a steady and increasing yield of alkaloid, whilst one variety had been ascertained by Mr. Broughton, the Government quinologist, to yield the extraordinary amount of 9·75 per cent. of quinine. The plants had been found to contain the greatest vigour at heights varying from 5,000 to

6,000 feet, and there existed a large demand for the seeds from almost every part of the world. Three parcels, containing 235,000 seeds of the three best varieties, had been forwarded for the use of the Mexican Government. Captain Maury, of the State of Virginia, had been supplied with a packet from the gardens, and all the information that had been gained by the botanists there respecting their cultivation. Mr. Cross, the gardener who conveyed portions of the original collection to India, was commissioned to visit New Granada, and make a collection of the most valuable species which grow in that republic. The only drawback to the complete success of the cultivation during the year was the condition of the private estates, which had received a check, and their value had fallen considerably in the market.

Looking around, however, the experiment appeared to be gaining ground in various quarters. Good progress was making at Darjeeling, where the total number of cinchonas was 3,028,110, viz., 2,232,532 in Government, and 795,578 in private plantations, whilst the area planted was about 965 acres. The fact of several private companies entering upon this cultivation on a large scale was regarded by the authorities as some guarantee of the ultimate success of the growth of these febrifuge trees on the slopes of the Himalayas. Seeds had been sent to Mysore, where the cultivation did not make such rapid strides as had been anticipated. In British Burmah a carefully-selected site had been planted, and the co-operation of the residents had been gained. It was feared, however, that, as a commercial speculation, an elevation of 2,000 feet would be insufficient, but the naturalisation of the bark could not fail to be a great blessing to the native population. In Travancore, the Government had established its garden in 1862, and we find in 1867 that 3,495 plants were raised from cuttings, and planted in a new clearing. Ten acres of forest land had been set aside for the purpose of cultivating the cinchona, and about six acres had been cleared and planted. Dr. Cleghorn, Conservator of Forests at Madras, who subsequently visited Peermade, in company with Mr. Markham, observes that "the Travancore sirkar has well seconded the efforts of the British Government, and that the results of the experiment is more successful here than anywhere else in Southern India, excepting in the Neilgherries."

The latest stage in the experiment is summed up in the dispatch from the India Office, dated 19th May, 1870. The series of careful and judicious analyses made by Mr. Broughton had resulted in practical conclusions upon certain im-

portant questions relating to the cinchona cultivation, the best conditions of growth, the time for harvesting, and the mode of gathering the bark. Upwards of a million plants were then permanently planted out, some being 25 feet high and 32 inches in girth. The time, therefore, in the opinion of the Government, had arrived for the adoption of some systematic course for utilising the very large quantity of febrifuge alkaloids now stored in the bark of the trees. This would be best obtained by a constant system of annual harvestings. Owing also to the large number of trees in a sufficiently advanced stage of growth to yield bark suitable for the extraction of alkaloids, the question was under consideration, whether this should be used in the manufactory at Ootacamund, in the Neilgherries, for the supply of the hospitals in India, or be sent to the London market, or whether a portion should be sent home, and a portion worked up on the spot. Also whether the plantations should remain in the hands of the Government for the supply of quinine to the hospitals, and the distribution of seeds and plants throughout India, or be eventually disposed of, as in the case of the Assam tea plantations. Thus far, therefore, the experiment may be regarded as having entered upon that point when the cultivation might be left to the natural course of commerce, and the Government could withdraw without detriment to the future prosperity of the undertaking.

Any notice of cinchona cultivation would be incomplete without paying some passing tribute to the Spanish botanists, Ruez, Pavon, and Tafalla, who made an expedition to Peru and Chili, in the end of the last century, and whose efforts resulted in the discovery of numerous cinchonæ, some of which are now growing in India. Their magnificent collection of plants was entrusted to a Royal Commission for arrangement and publication, whilst the results of their labours may be found in the 'Flora Peruviana,' the 'Quinologia' of Ruiz, with its supplement, and the 'Nueva Quinologia' of Pavon, recently edited by Mr. Howard. When the commission had completed its labours, the specimens were deposited in the Herbarium at Madrid, where they are kept apart in two large bundles. It may be added that the very interesting and voluminous report of the India Office, extending over nearly three hundred pages of matter of the most varied description, has been greatly facilitated in its perusal by the very admirably arranged index at the commencement of the book.

Analysis of Continental Journals.

By W. Ernes, M.R.C.V.S., London.

REFORM OF THE LAW IN REFERENCE TO APOPLEXY OF THE SPLEEN (MILZBRAND).

By Dr. Kuntz.

The proposed reforms are—

1. When an animal is attacked or dies from apoplexy of the spleen, the owner or his representative shall, within forty-eight hours, give notice to the police authorities. The penalty for neglect is to be increased on that of the old law.

2. All animals attacked are to be forthwith separated from the healthy, and handed over to special attendants, penalty for neglect the same as the old law.

3. Practitioners, whether qualified or unqualified, who undertake the treatment of the affected animals are enjoined to take care that none of curative remnants, such as blood setons, rowls, bandages, &c., be left in the stables, sheds, or other places, but be carefully interred, covered with a layer of quick lime; penalty as before.

4. All instruments which have been used are to be carefully wiped, repolished, and ground before being used again.

5. Animals affected with splenic apoplexy are not allowed to be slaughtered except under the supervision of a qualified veterinary surgeon; unqualified practitioners are prohibited to act under severe penalty.

6. The sale and consumption of the flesh, fat, milk, &c., of spleno-apoplectic animals are prohibited under penalty.

7. Animals such as horses, asses, cattle, and swine, must be delivered to the slaughterers with the skin and horns on, previously rendering the skin useless by slashing it cross-ways, afterwards they are to be interred six feet deep, with a layer of quick lime of at least four inches.

8. Sheep may be skinned under the forementioned regulations; otherwise they must be delivered to the slaughterer with the skins on, and dealt with in the same manner as other animals.

9. Slaughterers are allowed to fetch spleno-apoplectic carcases in close covered vehicles and in compliance with the

instructions; they may utilise the skins after disinfection under the control of the authority.

10. Throwing carcases of spleno-apoplectic animals in rivers, water-courses, or ditches is, under penalty, prohibited.

11. Hides and skins of spleno-apoplectic animals, the former only at the slaughter-yards, must be forthwith disinfected by ten hours' immersion in lime water, and afterwards they must be subjected to a six weeks' drying process in a separate room; without this the sale is prohibited under penalty.

12. The owner must acquaint the police authority with the means taken to dispose of the infected carcases.

13. The slaughterers must give information to the police authorities of all spleno-apoplectic animals brought to their yards, and keep a register of their disposal.

14. Swine, dogs, cats, hens, and other animals, must be prevented access to localities and places where either spleno-apoplectic or the carcases of the same are or have been located.

15. Small sheds or stables where infected animals have been located or have died, should be thoroughly cleansed and disinfected in accordance with the rules laid down by the law. Larger stables and sheds where horses and cattle or sheep are, must be totally evacuated, cleansed, and disinfected, when one *ad hoc* (*sic*) commission considers it necessary, otherwise with the exception of sheep sheds they are subject to a partial purifying and disinfection.

16. Whether, or in how far, the transit of fodder or manure should be interfered with or the traffic of as yet healthy animals out of the infected districts, or the transition of healthy animals through places where the malady prevails, be restricted or the postponement of approaching cattle fairs or prohibition of them altogether for a time be called for, must be left to the decision of the commission. Under ordinary circumstances these measures are to be avoided.

17. These measures are to be strictly observed under penalty of the sanitary law in reference to spleno-apoplexy, copies of which should be hung up in stables and sheds.

Recapitulation.

From the foregoing project of law it will be seen that great concessions are made to the proprietors of cattle, viz.:—

1. The skinning of sheep by the proprieter is allowed.

2. The animals which have succumbed to the malady can be sold to the knackers and utilised.

3. All restrictions as to the moving of cattle, &c., are abrogated or can only exceptionally be inforced.

4. The proprietor is allowed to utilise the manure.

5. Evacuating and disinfecting large sheds and stables is as a rule not enforced.

The claims of the sanitary police are—

1. Under all circumstances notice is to be given of the outbreak of the malady as the only means by which preventive measures can be taken against its spreading.

2. Instructions are given to the parties concerned of the sanitary regulations, penalties, &c.

3. A stricter supervision of the slaughtering of the infected animals.

4. Complete control over slaughter-houses.

Precautionary instructions:

1. Veterinary practitioners, herdsmen, servants, and others, are enjoined whenever an animal is affected with splenic apoplexy or has died of the same, to forthwith inform the owner or his representative of the fact, and also to give notice to the police authority; moreover, with current statements of the number of the animals attacked.

2. The attendants shall make themselves thoroughly acquainted with these instructions, for their own sake as well as for the sake of the healthy animals under their care, which they should watch with great vigilance.

3. The infected animals must be separated from the healthy in a manner so as not to come in contact. This is best effected by separate stables or sheds.

4. The attendant must be careful not to have any wounds or sores on the hands or any uncovered parts of their bodies.

5. They should neither eat or drink during actual attendance on the infected animals.

6. The best protection against the inoculation of the virus is personal cleanliness. Before entering the stables or sheds it is a good plan to anoint the bare parts of the body with oil of turpentine, which has the double advantage of preventing the flies stinging or settling on the hands, &c., and thus bringing the virus in contact with the skin.

7. A tub containing quick lime, or rather chlorate of lime, must be kept in the stables or sheds composed of one part

in 100 of water, in which the attendants are to wash their hands, arms, and every other naked part of their body.

8. Empirics and others not qualified should abstain from bleeding or other surgical operations, as well as the manipulations of the mouths of infected animals. Exploration per anum is strictly forbidden even to qualified veterinary surgeons.

9. Attendants and veterinary practitioners must take special care against being soiled with blood, suppurative matter, lymph, or excrements.

10. Milking of infected animals should be prohibited, inasmuch as the milk is infectious, and the hands of the milkers are exposed to the contagion.

11. In the skinning of sheep great precautions are necessary; the hands should be protected with oilskin gloves, or well anointed with turpentine mixed with poppy oil in the proportion of two of the former to one of the latter.

12. Those who have wounds or sores on their hands should not attempt the skinning of spleno-apoplectic animals.

13. The skinning should not be undertaken until three hours after death.

14. The knife used should be well oiled, and not be put between the teeth, as is frequently done, nor wiped on the clothes, but when done with carefully washed and dried.

15. After the completion of the skinning, the shepherd should immediately wash thoroughly the face, hands, arms, and neck, with soap, or better, with chlorinated lime water.

16. No time should be wasted in the operation of taking off the skin, but there is also considerable danger in too great a hurry or carelessness in this operation.

17. The carcases must be forthwith removed finally, or when this cannot be done, they should be temporarily covered with earth.

18. The temporary disposing of the carcase consists in covering it with earth, leaves, or straw, &c. The final, according to law, is to inter it in a hole six feet deep, and to cover it with a four inch layer of quick lime.

19. For the interment isolated localities should be selected.

20. Shepherd and other dogs should be shut up during the operation of skinning and removing of the carcases.

21. The shepherd should not carry the skin about with him, nor take it into his house, but it should be rolled up, the wool inside, until the disinfection can be made.

22. The method of disinfection is as follows:—The skin

with the wool on is to be immersed in lime water (1 part in 100) for the space of ten hours, and then to be hung up to dry in an isolated room or spot, not in the stables or places where hay, straw, or other fodder is kept.

23. Depasturing on places where carcases have been interred must be carefully avoided.

24. Drovers of cattle which have died of the malady should keep from the road for a time, and should obtain from the nearest village the means of disposing of the skins and carcases of the animals that have died under their care.

25. Skins of spleno-apoplectic sheep are not to be removed unless disinfected; drovers are not allowed to carry infected skins with them; such skins should be left with the slaughterers at the nearest place.

26. Blood, &c., should be covered forthwith with lime water.

27. All other animals, such as poultry, &c., must be kept away from the infected localities, and also from the emanations of them, such as dung, &c.

28. All localities where horses and cattle have been located, or only contain a few head of sheep and pigs, must be daily, or after the animals have been removed, cleared of all manure, &c., and well sprinkled with a solution of chloride of lime.

29. The dung is forthwith to be removed to the fields, and sprinkled with a strong solution of chlorinated lime, also a warning post is to be put on the heap.

These instructions are to be freely distributed, and put up in sheds, stables, and other localities when spleno-apoplexy prevails in the country.—*Magazin für die gesammte Thierheilkunde.* Berlin, 1870.

VETERINARY MEDICAL ASSOCIATION.

REMINISCENCES OF THE VETERINARY ART.

An Address delivered at the Opening of the Session, by James Cowie, M.R.C.V.S., Member of the Council, &c. &c.

The veterinary art is of no slight importance, not only to the owners of live stocks, but to the public at large. This is sufficiently evident from the immense capital employed in our domestic animals. There are in round numbers nine millions of cattle and thirty-four millions of sheep, which, added to the number of horses, represent a capital of more than two hundred millions sterling. It would be hazardous to reckon even the proximate amount of deaths among those arising from disease; but the loss must be prodigious, if it amounts to nearly the sum of thirteen millions sterling, as reckoned by the late Prof. Youatt.

In considering the history of the veterinary art in past ages, I shall have frequently to refer also to the medical art, in order the better to elucidate my subject, especially as in early times the one was more or less intermingled with the other.

In ancient times there were no professed practitioners of the healing art. The Arabians and Egyptians, and some other of the more civilised eastern nations, exposed their sick and diseased in public pathways and market places, for the purpose of attracting the notice and sympathy of those pretending to have skill, and of receiving and applying their prescriptions. At that remote period the horse was not an animal of much service and utility. Shoeing was then unknown, and the horse's hoofs being more tender and brittle than those of the camel and ass, the latter superseded his use, in almost all respects, except in time of war. Cavalry was no doubt employed in the earliest wars, as no animal in comparison to the horse could be so serviceable in the field of battle, either for tractability or speed, and, we may add, courage. But even in this capacity, although there were then no made roads, the natural brittleness of the horse's hoofs was a serious check to his value and efficiency. Hence we read in the Book of Judges, that, in the wars of the Israelites, about twelve hundred years before the Christian era, "the horses' hoofs were broken by their prancing." Under these circumstances we must come to a subsequent period, when the horse was of more note and utility, before we can expect to have much anxiety evinced in regard to his health. About six hundred years later, corresponding to the times of Jeremiah the prophet, we have the commencement of the Olympic games. The importance and magnitude of these games, and the excitement occasioned by them among the Grecians, may be judged of from the fact that several hundred horses started together to contest a race,—sometimes mounted by riders, and at other times yoked to chariots.

About that time the medical art was beginning to be better understood, and the treatment of horses in disease, considering their growing importance, must have made considerable advances. At a later period the Romans prosecuted the same sort of sport to an equal if not greater extent; for we learn that so great was the interest in, and so universal the desire to witness, the races, that there was an immense circle formed, round which were seats

placed, something like the form of an amphitheatre, sufficient to contain upwards of two hundred thousand people. From these facts it is to be presumed, that the horse must then have become of more repute, and to warrant us in concluding that some knowledge of equine, analogous to that of human medicine, had existed and been acted on in attempting to alleviate the sufferings and prolong the life of the noble racer. Indeed, about this time—the sixth century before Christ, or shortly afterwards—Hippocrates collected the scattered fragments of ancient medical knowledge into something like a systematic shape, and obtained for it the appellation of an art. He wrote upon the diseases of the lower animals as well as of mankind, and with such accuracy as clearly shows that he must have both studied and practised the arts on which he wrote. The redoubted general Zenophon has also left a commentary on the management of the horse. After him several others wrote on the veterinary art in conjunction with medicine, and seem to have practised both simultaneously. The elder Cato, about two hundred years before the Christian era, practised both arts. We are not told what the precise contents of his pharmacy consisted of, except that he patronised *cabbage* extensivelyi n his prescriptions; and that, on one occasion at least, he departed so far from homœopathic principles in prescribing for his wife as to kill her. Virgil was another eminent practitioner. His lofty genius did not disdain to laud

> "The generous horse that nobly wild
> Neighs on the hills, and dares the angry lion."

His knowledge of medicine in its then known branches qualified him to sing—

> "Morborum quoque te causas et signa docebo."

Indeed, we find from his own account, that he practised the veterinary art in the stables of Cæsar Augustus, who rewarded him well for his skill. It is certain that about this time, if not long before, the Romans had adopted some methods of shoeing, by which the horses' hoofs were protected; and hence he must have become more generally serviceable in rural pursuits, and otherwise. Both Aristotle and Pliny mention that shoes were applied to the feet of camels, oxen, and mules, during long journeys, of a substance resembling sole leather; and we read of Nero having his mules shod with silver and those of his Empress with gold.

These shoes or sandals must have been fastened on the hoofs without the aid of nails; and we are told that they were frequently thrown off and lost in marshy grond. From the nature and insufficiency of these shoes, and the trouble and expense attending their use, it is evident that the horse had not so far superseded the use and employment of other animals, among the mass of the people requiring their services, as to render a knowledge of his diseases and their treatment a matter of very great importance to the commonwealth, except in so far as the cavalry were concerned.

The veterinary art, however, had by this time obtained some repute, and regular practitioners were to be found plying their avocations. Shortly after, during the Roman wars in the early centuries of the Christian era, we find provision made for the appointment of a regular veterinary surgeon to each cavalry regiment. The art, in fact, flourished considerably during the last years of the Roman Republic, as we learn from the writers of that period, the last and best of whom, Vegetius, wrote in the early part of the fifth century. He seems to have been an amateur, but must have written from a practical knowledge of the subject; and some of his suggestions and remedies are approved of in our day. He advocates, moreover, the claim the profession had to respectability and public importance; hence, he was the

author of the axiom, which veterinarians take pleasure in repeating,—"Ars veterinaria post medicinam secunda est."

With the final overthrow of the Roman Empire, medicine, among the other arts and sciences, shared the fate of civilisation generally, in the intellectual gloom which enshrouded the fate of man during the dark ages. The Arabs alone, who have all along been remarkable for a certain stationary amount of knowledge, especially as regards medicine, still continued to retain the skill they had acquired.

In taking a parting glance of the healing art in these remote times, we find little of course to admire, and less to learn; and no wonder, for the more discriminating men of these days saw and despised the empiricism of the practitioners by whom they were surrounded. Pliny relates that the Roman Republic was without physicians for more than six hundred years; and Cato declared "that corruption would be general when the Greeks had transmitted their sciences, and especially their physicians." Petrarch, at a much later period, so late as the fourteenth century, writes to Clement the sixth, "Holy father, regard as a troup of enemies this crowd of physicians with which you are beset;" and he adds, "whole nations have done without them, perhaps they did better and lived longer than us."

The "glimmer of light" reflected by the healing art, feeble as it was, had no doubt, however, been the instrument of some good in lessening pain, and even in curing some of "the thousand ills," a conclusion warranted by an examination of some of the earliest writings, although the good had perhaps been, in a great measure, counterbalanced by the evil inseparable from ignorance and quackery. At all events, in extirpating the Roman class of physicians and veterinarians, in their general massacre, their mantle did not assuredly fall on their destroyers, the Goths and Vandals.

The most important era in the history of the horse was undoubtedly the period when the present system of shoeing was introduced. The exact time when this improvement, or as may be said, discovery, took place, which Professor Coleman used to say was only inferior in importance to the discovery of the application of steam, and by whom it was introduced, is a matter very much of conjecture. It is mentioned that when the tomb of Childeric, King of France, who died in 481, was opened, there was within the coffin a piece of iron resembling a horseshoe, which had been pierced with four holes; but this is no certain criterion to go by. The first authentic account on this subject is mentioned in the work of the Emperor Leo, in the ninth century, where it is distinctly said that the horses' shoes were fastened to the feet by nails driven into the hoofs; and, again, in 1038, we are told, when Boniface Margrave of Tuscany went with his bride, his horses were shod with silver and nailed with the same metal. Horse shoeing was no doubt introduced into this country by William the Conqueror; and the noble animal had then commenced his career of extensive usefulness for which his prowess and sagacity so well capacitate him.

In advancing to the period of the middle ages, we cannot discover any improvement on the doctrines of Hippocrates in the medical art, although much was added, through the prejudices and superstitions of the times, which he would have discarded. During the early part of that period medical practice, such as it was, was in the hands of the monks and clerks, they alone being able to read Latin, the language in which the sciences were written. Up to the twelfth and thirteenth centuries, England was supplied with physicians and surgeons from France and Italy, and their qualifications and mode of practice may be learned from the following quotation from a manuscript of this period in the Bibliotheque de l'Arsenal:—"In January it is not good to bleed, but you should take ginger as medicine. In March we should take rue as medicine, and drink sweet drinks; we must not, how-

ever, be bled, but may be cupped. In April it is good to bleed the middle vein, to cleanse the lungs, and to eat fresh meat, and to be cupped. In May we ought to eat hot things, and drink hot things, and bleed the liver vein, which is then full of venom, and avoid eating the fat or head of any beast, for such is injurious to health. In June abstain from excess, for the humours now rise to the brain. In September it is proper to eat the flesh of geese and pigs because of their viscosity, and take botany as medicine. It is good to draw a little blood both at the beginning and end of this month." Bleeding in spring and autumn, and physicking at periodical times, were then considered essential. Hence the same practice among some farriers, even in our day, is followed towards their patients, with the approval, generally, of the sager portion of farmers, who believe in their skill. At one time it was fashionable for women, old and young, to study and practise the profession, and we are about now, it would seem, to recur to that good old institution! At a subsequent period the mantle of Esculapius fell on the studious race of *barbers*, who continued their twin avocations until the revival of learning. The art of medicine, however, seems to have enjoyed little popularity for long after that period, and poor veterinarians did not get their heads raised at all. The following extracts will show in what estimation medical men were then held:—Burton, in his 'Anatomie de Melancholie,' observes, "there was no use of physic among us, and but little at this day, except it be for a few niee idle eitizens, surfeiting courtiers, and stall-fed gentlemen lubbers. The country people use kitchen physic, and see more in it." In the reign of Henry VI, about 1450, in a letter to her husband, Margaret Paston says, "For Goddy's sake beware what medicine ye take of any physieian of London. I shall never trust to them because of your fadyr and mine outryl!" A *consultation*, so much prized by us in cases of danger, does not seem to have much increased the patient's confidence in these days. Hence the poet says:

> "Like a prompt sculler one physician plies,
> And all his force and all his physic tries;
> But two physicians, like a pair of oars,
> Conduct you soonest to the Stygian shores."

These and such like criticisms were, no doubt, galling to the profession, who, doubtless, believing in their own qualifications and intrinsic value, must have viewed them very unjust and unmerited. Their conscious superiority was well represented in the person of a Florence doctor named Simon de Villa, who, in announcing his advent, says, "I have enough of sense and learning to furnish a whole city, and yet leave sufficient for myself."

The primitive college of physicians received its charter from Henry VIII, which laid the foundation of medicine as a seience, and roused a spirit of inquiry among a new class of persons regarding horse medicine. A few of these tried their skill at authorship, but none of them seem to have enjoyed any celebrity until one Gervase Markham, Gentleman, wrote his 'Masterpiece." He seems to have been a voluminous writer, and an extensive practitioner. He flourished about the end of the sixteenth century and beginning of the seventeenth; and he seems to have eclipsed all his contemporaries. His *Maisterpiece*, as he calls it, went through several editions. I shall make a few extracts from it for the purpose of showing the amount of knowledge then possessed by the veterinarians. Authors are generally very modest, or wish to appear so, in their prefaces; but Markham seems to have been fully sensible of his overwhelming superiority, and to proelaim it at once without a morsel of delicacy. He assures his readers that all knowledge of the horse and his diseases is contained in his book; and, farther, that "it contains me amply and fully adorned with the best of mine own feathers;"

and he adds, "Let me give assurance that there is that newness of truths, art, and approved experience, which unto this day hath not been discovered in any other author. It is a true *maisterpiece* indeed, and so exact in every part which time and my own industry hath brought to light; and because old age groweth upon me, and that the grave will never be a whit the better, I thought therefore to divulge them to the world, rather than to have hid them in oblivion, desiring to give God the glory, and me but only thanks and good wishes!" One might have expected, in reading such a preface, that the writer was to make disclosures which would revolutionise the medical art. On the contrary, however, nowhere could we find a better specimen of the dogmas of the old school, and the essence of quackery. But we shall let Gervase speak for himself; and, first, as to his knowledge of anatomy and physiology. Modern science has not thrown much light on the use of the *spleen;* but Markham found no difficulty in the matter. He says, "'Tis the reception of melancholie, and the dregs of the blood, and is as liable to infirmity as any inward member whatever. 'Tis through its spongyness apt to draw in all manner of filth, and to dilate and spread it quite over the whole body, and which swelling gives much grief to the midriff, and makes the heart faint." Mr. Markham favours us with a dissertation on *tired horses*. For such a "disease," as it was then reckoned, which we attribute to *overworking*, we find the best cure to be *rest*. But let us have a specimen of the "wisdom of our forefathers." "For," says Markham, "to tell you the truth in plainness what tiring is, 'tis when a horse by successant labour hath all his inward and vital powers, which should accompany and rejoice the heart, expelled and driven out to the outward parts and less deserving members, leaving the heart forlorn and sick." Now for the cure:— "This is my most general advice: if at any time you tire the horse, take of old wine a quart, saltpetre three ounces, boil them well together, and bathe all the horse's legs with them, and pour oil and vinegar into his nostrils, and give him the drink of sheep's heads. If the tireness proceeds from dulness, fearfulness, and unwillingness, take of ordinary window-glass, beat it into fine powder, then take up the skin on each side of the spur vein betwixt your finger and thumb, and with a fine awl or bodkin make divers holes through the skin, so rub the glass powder very hard into these small holes, which done, mount his back, and do but offer to touch his side with your heel, and be sure if he has any spirit in him he will go forward, the greatest fear that he will go too fast. There are others who thrust a burning brand or iron in his buttocks, or bring bottles of blazing straw about his ears. There's neither of these cures but is exceeding good." As prevention, however, is better than cure, our author advises "to take a slice of fresh beef; having steeped it in vinegar, lay it about the bit or snaffle, and having made it fast with a thread, ride your horse therewith, and he will hardly tire." For the disease of "founder," viz. inflammation of the laminæ of the hoof, which he calls "foot sleep" and "a stoppage of the blood," he recommends that "a garter should be tied tightly above the knees and above the hinder hoofs; and that done, cause him to be walked upon the hardest ground you can find for the space of two or three hours. If he be loathe to go, as commonly he will be, let one follow and beat him with a stick or wand to force him on. Then, after his walking, let him be set up and tied to the rack, that he lie not down, and afterwards let him be again walked two or three hours." One would think after that, the most humane way would have been to have *walked* the poor animal into the knacker's yard. Gervase Markham having eclipsed all his contemporaries in our department, had resolved to occupy the "entire field," as he affirms, "of all knowledge that pertaineth to the horse." Accordingly, about the year 1600, he favoured the Queen's subjects with a volume of 500 or 600 pages, entitled 'Cavalirice;

or, the Art of Horse Rearing and Management.' In this work he attains the summit of human knowledge, or, to use his own words in the dedication, "A new and eternal foundation is laid, which will continue until all the corners of the world is consumed." As this work is both scarce and curious, I may be excused for giving one or two short extracts from it, to use the author's expression, "this book of genus and superfluity of wisdom." After describing the care requisite to a mare during her confinement, he says, "Now for the sucking of foals. Although one man writes that all authors do agree that foals should suck for two years at least; nay, that, after the Spanish fashion, they should suck until they cover their dames, I, for my part, and, as I think, all good breeders are of a contrary opinion, for, however, in the days of Pliny and Aristotle, two years might be thought little enough, yet in these our days we find it full one year too much. As soon therefore as your foals have sucked a year, or till your mares be ready to foal again, you shall then, some three or four days before the full moon, about nine or ten of the clock of the forenoon, take all your foals from your mares."

In these days they had a very summary method of treating horses that had the unseemly practice of protruding their tongues while in saddle or harness. Salamone de la Browe—who is described as "a man of exquisite practice and knowledge"—and others, recommended that when a horse "doeth in his ryding thrust forth his tongue, and will not by any means bee made to keepe it in his mouthe, to take a pair of nippers and seize and houlde faste the tongue that he cannot stir it, and with a sharp razor cut so much of his tongue away as he puts out of his mouthe." Gervase Markham, for the inconvenience of the thing, "can," as he says, "give no allowance to this sort of dismemberment," but recommends the rider "to carry a good club with him, and when the horse thrusts out his tongue to knock it in with the great end of said rodde, or, if that wont do, muzzle him."

The practitioners in Markham's time, and long after, were utterly ignorant of anatomy and pathology, and of course physiology was quite beyond their comprehension. They talked of the function of the *gall bladder* where there is not one to be found; and they knew nothing of the function of any of the internal organs which they could see and handle. Their nomenclature of internal diseases consisted of such terms as "gross humours," "inward grief," "molten grease," "foundering of the body," &c. They talked of symptoms of diseases of which horses in our day would seem to be exempted. "Our very mortal distemper," they called "anticor," the sign whereof is a swelling at the bottom of the breast, rising upward to the neck, the cause whereof is from the great abundance of blood which is bred by too curious and proud keeping. In treating diseases they occasionally bled, but always very slightly. Aloes and other purgatives were unknown to them. Wine, oil, urine, the staler the better, cinnamon, brimstone, &c., were their favourite medicines. It would thus appear that nature had, in almost every case, not only to contend against disease in bringing the patient to convalescence, but generally the treatment too.

The ignorance of the veterinarian, however, cannot be wondered at, considering the low state of medicine generally. Thus Pemel, a surgeon in Kent, writes a large treatise, about this time, which contains much absurdity throughout. While our modern surgeons find cancer a most perplexing complaint, Pemel had no difficulty in eradicating it, by the application of the juice of calandine and goose dung! He recommended watercresses for cleansing the blood and dispelling gross humours, and as being very useful in green sickness, and profitable in stoppings of the liver and spleen. Violets and thyme were specifics for almost every disease; but it is useless to multiply examples.

After the discovery by William Harvey, physician to Charles I, of the circulation of the blood, about 1630, human anatomy and diseases came to be better understood, and gradual advances were made in the science. Boerhaave flourished in the end of that century, and contributed much towards a better understanding of medicine, and in giving an *eclat* by the splendour of his talents to the science over Europe.

During this time the veterinary art remained almost *statu quo*, and our old friend, Gervase Markham, Gent., was still the standing authority. The only person who attempted any improvement at all on him was Snape, who was farrier and veterinary surgeon to Charles I after 1640. He was contemporary, and must have come in contact with Harvey, both being engaged in the king's service, and he would have the benefit of his conversation.

Gibson, who wrote in the beginning of last century, was perhaps the first who discarded many of the absurdities and false doctrines which had, among veterinarians especially, been the growth of two and twenty centuries. In describing the nature and causes of diseases, he and his immediate predecessors seem, however, to have gone somewhat out of their latitude. In speaking of the cause of catarrh, or common cold, Gibson says—"Sometimes many of the symptoms will happen when the air is too much rarified and thin, for by that means the pressure is not sufficient to force the blood through the small vessels of the lungs, but will occasion a stagnation there, and cause a difficulty in breathing, which will be accompanied with a cough." Another, disdaining to conceal his discovery regarding *cataract*, which we now-a-days consider to be simply an inflammation and subsequent opacity of the crystalline lens, gives us the definition of it. "When a horse starts much, or seems frightened at everything he meets, his eyes are bad, arising from congealed bits of mots floating in the aqueous humour, and these when they become adherent, or sticky to one another, form cataract."

These are examples of the errors into which such men, at such a time, and stepping as they did into an untrodden path, were likely to fall. At the same time justice must be done them, in admitting their skill and judgment on many points of practice; and they certainly laid a foundation which was followed up and improved on, as light broke out, and opportunity was afforded, by their successors.

We must likewise remember that at that period medical men of good standing retained many of the errors and absurdities of a period long gone by. For example, a student and disciple of Boerhaave, and a man of considerable repute, writes thus in 1740—"It is an undeniable fact that the planets have an exceeding wonderful effect on the fluids of the body." And again, the same M.D., in speaking on the subject of bleeding, says—"It is necessary, where the blood is too much agitated and in motion, or where it is thick and sizy; and bleeding, moreover, renders the body cool and lightsome."

Even long after that period such doctrines as the following were taught in the medical schools:—"The use of the bile is designed by nature to blunt or sheath the acids of the chyle, because they, being entangled with its sulphurs, thicken it so that it cannot be sufficiently diluted by the juices from the sweetbread to enter the lacteal or milky vessels." And even so late as 1770 Dr. Percival informs us that "physicians prescribed the teeth of bears, the jaw-bones of pikes, and the black lips of crabs' claws, in jaundice."

The art of pharmacy must have been rather a complex affair in these days. Chemistry was then in its extreme infancy, and without knowing the peculiar property of the drugs which they prescribed, medical practitioners jumbled a number of ingredients into one dose, the one portion very likely neutralising the other. The wretched farragoes of the olden time—

> "Burnt clouts, chalk, and clay,
> Powder of bone, scalings of iron, glass,
> And worlds of other ingredients
> 'Twould burst a man to name"—

have given place to the fruits of common sense and science; and when we contemplate the condition of the more elevated sister art, there must be great allowance made for the ignorance, and blunders of the veterinary practitioner. It need not, therefore, astonish us to read in an author of "forty years' experience" that a nerve is a long, small bone, with very fine pipes, or hollow fibres, wrapped up in dura mater, or pia mater, which not only covers them all in common, but also encloses every fibre in particular!

We shall now bid adieu to the reminiscences of medicine during the period of its history, which reflects little credit on its character as a science, and approach the time when the discoveries of Cullen, Black, Savoisier, and others in chemistry, and the researches and experiments of John Hunter, and other eminent English and French surgeons, shed a lustre on the profession, and advanced its character and usefulness. At this time, too, the veterinary art began to draw attention. Although farmers do not get much credit in originating schemes for social melioration in general, it is satisfactory to be able to state the fact, that the first impulse given to the veterinary art, was by a body of farmers, composing the Odiham Agricultural Society.

At a meeting held on the 29th July, 1785, the following minute is entered:—"Resolved, that farriery is a most useful science, and intimately connected with the interests of agriculture, and it is in a very imperfect, neglected state, and highly deserving the attention of all friends of agricultural economy. That farriery, as it is commonly practised, is conducted without principle or science, and greatly to the injury of the noblest, and most useful of our animals. That the society will consult the good of the community in general, and of the limits of this society in particular, by encouraging such means as are likely to produce the study of farriery upon rational and scientific principles."

The subject was discussed at various subsequent meetings; and in 1789 it was "Resolved that for the complete establishment of farriery on rational and scientific principles in this country, such institutions for education are necessary as have been established in France and other places."

The useful and persevering labours of this society, in this particular sphere, were terminated on April 26, 1791, on the establishment of the Royal Veterinary College, in London, which it was the principal means of setting on foot. M. de Sainbel, a French veterinarian of eminence, was appointed Professor, and he commenced his lectures with four students. Stables and other offices were erected in the year after, but before the end of the session, 1792-3, the Professor died, at which time there were fourteen students, and fifty horses in the infirmary. Messrs. Moorcraft and Coleman, a medical gentleman of great ability, were afterwards appointed joint Professors. The former soon resigned, and the latter, feeling his own inadequacy, wished to do so too, but was prevailed on to continue, and he held the professorship for nearly half a century, much to his own credit and the benefit of the public. Since the establishment of the Veterinary College, it has been gradually extending its beneficial influence in all quarters of the globe. The medical treatment taught there is extended alike to the troop horse on the banks of the Ganges, the Dragoon's massive steed in St. James', the Farmer's nag, and the Gypsy's ass on the common; as well as to all our domestic animals. The expenses of the college, which are considerable, are partly defrayed by Government—its other resources are derived from the students and subscribers. Some forty-five years ago another school was opened in the University of London, which was taught

by Mr. William Youatt, a well-known author and an esteemed veterinarian. It has been discontinued now for many years. Upwards of forty years ago a school was established in Edinburgh by Mr. William Dick, which is still extensively patronised. And a few years ago a school was opened in Glasgow, which is efficiently taught by Prof. M'Call and assistants. The veterinary pupils, many years ago, were generally composed of young men of inferior education, and of the standing of working mechanics; but as more proficiency came to be required of them, and better remuneration given them for their services,—and as, moreover, through the influence principally of Prof. Coleman, a veterinary surgeon's pay in the army was considerably increased, and his status correspondingly raised, a superior set of students gradually drew towards the College; and before they can now obtain a diploma, they must submit to a strict and successful examination on anatomy, physiology, chemistry, materia medica, and pharmacy.

The diseases of the lower animals are not so numerous nor so complicated as those of the human being; and the medicines employed are comparatively few and simple. This, I should say, is more applicable in the past tense, for the medical profession, in their prescriptions, are curtailing very much both the variety and quantity of their drugs. The preparatory period for study might very profitably be extended; but I would ask, is that period always judiciously employed? The practical knowledge and powers of exposition of the professors are undoubted, and it is to be hoped that they require the steady attendance of the pupils at the lectures, in the dissecting room, and in the practical department among the patients.

Having given a hurried, and I fear imperfect sketch of the rise and progress of the veterinary art, you will, I trust, permit me to address a few sentences to you as students and prospective veterinary surgeons. You will be engaged in a responsible calling. The pecuniary interests of the agricultural class, and other owners of domestic animals, are largely involved in your scientific capabilities and, I may add, moral qualities. You may acquit yourselves well, and pass with credit the Board of Examiners, with little more than theoretical knowledge. A good memory and diligence as book students, with but a scant application of the dissecting knife and personal observation of hospital practice, may have carried you through the ordeal of examination, but such knowledge, when put to the test, leaves its possessor sadly deficient. Be his merits never so indisputable, the man who receives with a beaming countenance and thankful heart his diploma, and thinks he can strut abroad as a proficient, is very much mistaken. He has learned only the bare rudiments of his profession whatever his application may have been. His vanity, self-sufficiency, and confident air will become less and less as he advances in knowledge and experience. If he is a man worthy of the profession—worthy of trust in a general sense—he will day by day be a diligent student; and, after all, he will find his judgment often at fault. Although veterinarians have not the same opportunities as medical men of detecting internal disease in their mute patients, they enjoy advantages, if taken, which the others do not, in the free and unfettered opportunity afforded them of making *post-mortem* examinations, and in dissections generally. To avail one's self of such privileges is not more profitable than pleasant. It is, moreover, but doing homage to a natural impulse. As the poet says—

> "Give e'en a dunce the employment he desires,
> And he soon finds the talents he requires;
> A business with an income at its heels,
> Furnishes always oil for its own wheels."

Memory and impressions, be it further remarked, are not to be trusted alone. Facts and observations should be carefully recorded for future

reference. Sir Astley Cooper was wont to insist on this to his pupils in his lectures; and it is said that the eminence of Drs. Monro and Parry was, in a great measure, ascribed to the habit they had of noting down cases as they occurred.

One is apt to think that he can retain on his memory all the more important cases in practice worth recollecting, but in this he is undoubtedly mistaken, as the sequel will show him. He may bear in mind the general features of particular cases, but this practically will avail him little. The form of disease in its various degrees, from incipiency to virulence, varies often so much, calling for corresponding treatment, that the benefit of unrecorded experience is in a great measure lost while memory is the only depository. Sir Astley Cooper used often to express his regret that so far country practitioners communicated their experience to the profession, and this arose no doubt from the want of a note-book.

While you have a duty to perform to your employers and a duty to the public, you have also a duty to perform towards one another as professional men, and in this respect it would be well for you to follow the example of medical men of respectability. There are many nice points involved in this general injunction which can be observed most faithfully by following the golden rule of "doing unto others as you would that others should do unto you." I have always a suspicion of the soundness of a man's ability and principles who is in the habit of disparaging and branding his professional neighbour, as if it were requisite, in order to raise his own reputation, to decry and blast that of his compeers. Without going into particulars, I would just advise you not to show officious interference in cases under the charge of another; and when you are the second called in do not prescribe or express an opinion until the other is present, and if you cannot then agree with him there is no necessity for your saying so to any one but himself. This becoming delicacy, while it must be duly appreciated, will save, it may be, undue reflection on him, for you may not after all be right. And, moreover, unless you were honestly convinced of the inefficiency of your rival, you should give no encouragement to the employer to supersede him in your favour. Besides the sinfulness, iniquity, and unmanliness of backbiting, it seldom fails, in the long run, in operating to one's own prejudice.

On the other hand, be not too hasty in resenting imaginary or real offences of your rival—

> "Rather put up with injuries than be
> A plague to him who'd be a plague to me.
> I value quiet at a price too great
> To give for my revenge so dear a rate;
> For what do we in all our quarrels gain,
> But counterfeit delight for real pain."

While I have endeavoured to press upon you some of those duties which at the proper time, when you shall have entered on the stern realities of business life, allow me finally to supplicate your kindness and humanity towards all your patients, more especially the horse—the noblest, the most gentle and useful of the lower creation. To be successful practitioners there is more than pathology and its kindred arts to study. You know that the horse is a peculiarly sensitive, nervous animal; and in order to gain his confidence and a proper command over him he must be treated with considerate firmness and gentleness combined, in the exercise of which none of you should be deficient. You have been or will be taught to adopt a rational and scientific mode of treatment of his diseases, in place of the haphazard nostrumism of those in a bygone day, and I would entreat of you to show your superiority likewise, in your anxiety to spare him all un-

wonted, unnecessarily severe operations, and in enforcing due regard to stable and dietary measures for his comfort and convalescence. Much does the ever toilsome, never murmuring steed contribute to the enjoyment and usefulness of man, and his reward is but too often the overtask and the lash; and yet, withal, how gentle and forbearing he is; Cowper beautifully delineates the amiable qualities of the horse when he says—

> "There they wait their wonted provender,
> Not like hungry man, fretful if unsupplied,
> But silent, meek, and patient,
> Of the slow-paced swain's delay."

It is, therefore, no mean office to be employed in exercising skill for the relief of such a help-mate to man; and while you are thus usefully and honorably engaged, every one must wish to see you enjoy the rewards of deserving merit, both in a pecuniary point of view and in the esteem and respect of the public at large.

OPENING OF THE SESSION AT THE EDINBURGH VETERINARY COLLEGE.

The session of the Veterinary College was opened on Monday, Dean of Guild Russel presiding, in the absence of the Lord Provost. There were present—Sir Alexander Gibson Maitland, M.P.; Councillors Howden, Blackadder, Cranston, Millar, Field, Sloan, and Rowatt; Dr. Donaldson (High Scool), and a number of other gentlemen.

Dr. Young delivered the opening address, in the course of which he referred to the necessity that existed for the raising of the standard of the qualifications for intending students, for which purpose an arrangement had been made between this College and those of Glasgow and of London for the establishment of a preliminary examination. The Glasgow Principal had, however, he was sorry to say, resiled from that agreement, in so far as, instead of having the examination conducted by the Rector of the High School, he persisted in examining intending students himself. That was a course which, if continued, would seriously hinder the good that had been aimed at in the establishment of the preliminary examination. The rest of his address was taken up mainly with advice to the students as to the prosecution of their professional studies. Sir A. G. Maitland, M.P., then addressed a few words to the students, prefacing his remarks by stating that he had not come there as representing the Highland or any other society, but simply and solely as one of the general public, which must always take a deep interest in all that concerned them (the students). He could give one or two reasons, which he thought would be satisfactory to them all, why he, as one of the public, must and did take an interest in them. He would just mention as a proof of what he said, that having missed the train he had walked ten miles to meet them and hear the address. (Applause.) He knew he should

receive instruction, and he had received instruction. When he was many years younger than he now was, he had himself taken a course of veterinary in the College of Vienna, and he considered that he had been very much benefited by that course. (Applause.) They were entering, he said, upon the study of veterinary science, which would fit them for a profession not only useful but honorable. Every profession and every trade was, to a greater or lesser extent, honorable, as it was followed out, and if they followed veterinary out with zeal and carefulness, with energy and interest, it would be to each and all of them an honorable profession. (Applause.) He, as a large owner of stock and cattle, had for many years taken a real interest in all the lower animals. He assured them that all large owners of stock looked equally with himself with great interest on the character of those young gentlemen who proceeded from colleges such as that. As year succeeded year, those gentlemen looked upon their stock as of greater value, and were regarding with alarm, therefore, the spreading over the entire country of diseases and maladies which it would tax the utmost efforts and skill of them (the students) to cure. In regard to those colleges, it had been his own anxious endeavour to put them on a proper footing, and he thought those gentlemen who acted with him, and one of whom he saw present there, would bear him out when he said that he had always done all he possibly could to place the profession on what he considered its proper platform. (Applause.) He advised them all, in making their visitings, to take notes of all they saw, heard, or touched, and those notes might be extended into diaries in the evenings. Nothing could possibly be of more benefit to young men than ample, copious notes, the experience recorded in which would enable them, if ever they should become unable to continue professional visiting, to become in some of the large towns consulting veterinary surgeons. (Applause.) He would also ask them to recollect, in visiting sick animals, that the human voice had far more effect upon animals than people usually were aware of. (Applause.) Nothing was more startling to an animal in health than the tone of a rough voice, and it was his practice, when a new man came into his employment, to notice if the man's voice was rough or gruff, and if it was, his first week was generally his last in the place. (Laughter and applause.) He concluded by saying that he took a deep interest in each of them (the students), because he knew not but after they had finished their course he might find them in one of the districts with which he was connected, and therefore he wished them God-speed in the session that was now opened, and he was sure that with all the opportunities and advantages which would be given them in the college, they would be amply rewarded if they only paid sufficient attention to them. (Applause.)

The proceedings were brought to a close with the awarding of hearty votes of thanks to the Dean of Guild, Sir A. Gibson Maitland, M.P., and to Dr. Young.

OPENING OF THE SESSION AT THE GLASGOW VETERINARY COLLEGE.

The Winter Session of this College was opened on Wednesday, the 26th October, by an introductory lecture, delivered by Principal M'Call, in the presence of a large number of students and others interested. Among those present were Professor John Young, M.D., Glasgow University; Dr. Adam; Thomas Greave, Esq., late President of the Royal College of Veterinary Surgeons; Professor J. Dunlop, M.D., Andersonian University; Professor Robert Wilson; Professor Fordie; Professor R. C. Moffatt; Mr. Cockburn, M.R.C.V.S.; and Mr. Robertson, M.R.C.V.S., Greenock; Robert Walker, Esq., of Letham Hill; Dr. Stirton; Rev. D. Brown, St. Enoch's; Rev. A. R. Storry, Carmunnock, &c. &c.

Principal M'Call said—Gentlemen, as is customary on such occasions as the present, we inaugurate the duties of our Winter Session by the delivery of an introductory address to the students; and I have the honour of appearing before you in the discharge of that duty.

To me, gentlemen, the delivery of an introductory address has always been a pleasing duty—so much so, that for the last ten years, with two exceptions, I have always found myself in the same happy position in which I am to-day, and I am delighted to say that I have never upon any previous occasion endeavoured to perform the duty with feelings of greater pleasure and thankfulness. And if in thought with me you cast your eyes back some ten years, and picture to yourselves three young men listening to a lecture delivered by gaslight in a recess of a shoeing-forge in this city, the lecturer with scarcely a friend to advise him, and a comparative stranger to all within its walls, and behold, as you now do, the same individual, by the blessing of God, comfortably housed within his own premises, surrounded by a body of students second to none in any similar institution, and although last, not least, supported right and left by professional and other friends and well-wishers, need you wonder, then, that his sense of gratitude should be in excess of that felt on any former occasion. (Applause.)

But, gentlemen, there is blended with the pleasing as, alas! we all so often find, a certain amount of the melancholy. One of the three young men I have alluded to, shortly after the close of that, to me, ever memorable first session, was called to study in a higher sphere—a sphere to which, I trust, all our labours here may finally tend. And since then, gentlemen, death has not even spared our small circle. He has seized from among you students the pride of the session. He has seized from among us your instructors in our day, the pride of our number, if not the most accomplished lecturer on his subject, of the present age. I refer to our late colleague and dear departed friend, Dr. Penny.

And, gentlemen, I narrate these facts in order that I may, from their consideration, draw a moral, and it is this:—However dark and disheartening the circumstances may be, provided the desire of the heart is earnestly set on the accomplishment of an object, and provided it is physically possible, morally right, and religiously good, it can, with perseverance and time. become more or less an accomplished fact.

Many, or at all events not a few young men, commence life halting between two opinions almost on every point of duty and life, and as a consequence, then, attempts at progression are lame and impotent. "To be or not to be, that is the question?" and should always be followed by a decisive response from the heart and the head. Shall I be a veterinarian, a minister, a doctor of human medicine, or any other of the many professions we might name? It is certain you cannot be all of them. You may be one of them, and one profession earnestly pursued is enough for most men. You have, then, fixed the choice, we presume, by your presence here to-day; and we hope you have been led to the selection after much serious thought and earnest consideration. And now that you have voluntarily enrolled yourselves as members of our corps, we trust that you will conduct yourselves as good soldiers; and in order to do so you must scrutinise your thoughts and weigh well your actions. Many students seem to think that College days are, and were intended to be "fast"—that is, to be spent frivolously, thoughtlessly, or even wickedly. Now, my young friends, you have no time to spend thoughtlessly on trifles, and why would you waste your strength—the golden period of your short life on earth—in the pursuit of wickedness? Remember, "a well-spent youth makes a happy old age." and that "those who sow to the flesh shall of the flesh reap corruption." Again, my advice to you is, subject your conduct and your action to three tests—the physical, the moral, and the religious. To the physical, in order that your time and energies may not be misspent, running after a phantom—striving to lay hold on that which is beyond your reach; to moral law, in order that your conduct may be respectful, brotherly, affectionate, and worthy of imitation in the sight of all men; to the religious, in order that you may have grace given you "to live the life of the righteous and die the death of the godly." It is not enough that a man be a good moralist. A keen sense of the preservation of life and health may guide him in such a course, but the unerring guide to all actions is love to God.

Trusting that those among my hearers whom I have the honour to call students will endorse the sentiments I have expressed; trusting that they have selected their profession after much serious thought, and in the spirit and after the standard of test I have endeavoured to pourtray, I am now prepared to offer to the first year students more especially a word or two of advice.

In the race of life, gentlemen, there are two motives which generally urge young men onwards, and ultimately carry them

forwards to the first rank, namely, ambition and duty. Some men become great through the ambition to be so; others, perhaps humble-minded, gain the pinnacle of fame, their actions and their thoughts being regulated by a deep sense of duty; and, gentlemen, if you desire to study your own happiness and that of your fellow-labourers in this life, let duty and not ambition be your "guiding star." It is far better for a man to be happy and contented, conscious of having discharged his duty to society, than discontented, although fortunate in his ambitious career. Most men are fortunate at some period of their lives, but many men have never known what it is to be happy and contented. Thousands of ambitious men have fallen a wreck upon the rock of ambition and fortune, but none have foundered upon happiness. After alluding to the examples of Alexander the Great, of Cæsar, and of Napoleon in proof of this, the lecturer went on to say:—Let duty, then, be the motive power, the mainspring of your actions, and although many of the high hopes and lofty aspirations you had formed of your future career in life be not realised, rest assured, the sum of all your labours will be contentment and happiness—that for which the most ambitious towards the close of life would gladly exchange position. (Applause.)

I consider it my duty, however, to say that with every attention to duty few members of your adopted profession rise to power or eminence or to be men of note. Ours is a humble profession, and its members must carry themselves humbly before the world. But while admitting this, there are few professions of more usefulness and none more interesting. In social importance we do not cousider it on a level with the medical profession. Human life is of incomparably more consideration than that of the brute. The requirement, however, of the knowledge requisite to conserve the health and life of the lower animals is equal to that of the higher, and the stimulus to its acquirement as inviting in the one as in the other. So that in one sentence the difficulties in the way of the acquirement of a knowledge of veterinary medicine and surgery, and the pleasure and blessings—the result of its acquirement—are as many and as pleasing in the one profession as in the other. And this leads me to observe that while the veterinary profession can never rank as high in public estimation as the medical, yet it is destined, as years roll on, to creep much closer alongside its elder brother. (Applause.) We admit the two professions can never be equal in social importance. We admit, with sorrow, that they are yet wide apart in scientific and practical results. But we know the reason. We know the enemy and the war against him has in earnest begun. The enemy, I need only mention, is lack of educatiou. Let the profession see to it that those who shall fill your footsteps and mine shall have received the same liberal education in their youth as their medical compeers, and I venture to prognosticate that when this event has been accomplished the science and the practice of the one profession shall be as exact as the other, and the veterinary

profession shall be enabled to discharge much of that debt it has so long owed to the medical profession. I rejoice to have this opportunity of publicly stating that much of the progress made by the profession since I joined it has been the result of the earnest perusal of medical works, and the reduction of the principles there laid down to meet the varied circumstances of our patients. (Applause.)

Gentlemen, it has been my custom at our annual meeting briefly to advert to a few of the more important topics which have engaged the attention of the profession, and which, owing to the nature of our calling, are generally of interest to the public as well as the profession, and two of the more important subjects of discussion appear to me to be the working of the Contagious Diseases (Animals) Act and the practical examination of veterinary students. Having had the honour of advising Government through two separate sources prior to the framing of the Act, and having had the further honour and responsibility of carrying the provisions of the Act into practical effect in this large city, I hope I am in a position to speak with a certain amount of authority on this subject. (Applause.)

The Act and the Orders in Council founded on the Act, in my opinion, give, and have given, ample power to deal with and eradicate contagious diseases in cattle and sheep, provided they are carried out to the full extent in all cases. It was the intention of Government that the local authorities should employ properly qualified veterinarians to act as inspectors; but, instead of this, many instances might be cited where the local authority have appointed policemen and others equally unqualified to the office of inspector. Such inspectors being ignorant of the powers they possess under the Act and its ever varying Orders in Council, and, of course, grossly ignorant of a knowledge of the nature of contagious diseases in animals, and unable to recognise such affection in the living or dead subject, have brought the Act into disrepute in such localities, and have induced persons to conceal rather than reveal the presence of disease among their herds.

The publication of the names and addresses in the newspapers of persons whose stocks are affected is also a mistake and not provided for in the Act, and a serious obstacle to voluntary information. In other cases the local authority have appointed one inspector (qualified or unqualified) to do the work of two or more. And lastly, the local authority, in not a few cases, have taken up a line of action, different, nay, in some instances, antagonistic to the wording and evident construction of the Act. In one case which came under my observation, the local authority, instead of having "diseased animals, or animals housed with diseased animals," killed at the nearest slaughter-house, actually had forms printed as licences, setting forth that *they* permitted the removal of diseased animals to the Edinburgh and Glasgow fat cattle market. A very respectable and extensive dealer was offered cattle under these circumstances but declined them, and

through his kindly informing me I was enabled to trace a number of cattle from the same quarter, and to place my hands upon them. The licence was produced, and worse than all that has been narrated, it bore no written destination, so that the unprincipled seller and purchaser could carry the animals wherever they chose, and until they were disposed of to their satisfaction.

But, it may be asked, why allow our local authority to make laws contrary to the spirit of the Act, and to the injury of other local authorities and the whole community. And the only answer that can be given is, that the Government believed and trusted that each local authority would do its duty; and in this, as we observe, they have been deceived.

It was my opinion prior to the passing of the Act, and it is now my decided conviction, that there should be a compulsory slaughter of diseased animals and a proportionate compensation allowed, as in the case of cattle plague; and until this rule is introduced, and each local authority bound to enforce the provisions of the Act under severe penalties, veterinary surgeons only appointed as inspectors, and a Government officer deputed to exercise surveillance over local authorities and their officers, the Act will continue to prove, as it has done, inadequate to prevent the spread of pleuro-pneumonia, epizootica, and other contagious diseases, far less to extinguish or stamp them out.

In Glasgow, I am glad to say, since the days of the rinderpest, there never has been at any one period more than half-a-dozen separate dairies affected with contagious diseases of any kind; and at the present moment there are only three, and in each case the disease has been introduced by new purchases from the country. Such a condition of matters is a great improvement as contrasted with the enormous mortality and loss of money which ensued in a like period of time prior to the rinderpest, as may be ascertained by a reference to my published tabulated statement of the losses sustained by the dairymen of Glasgow for periods under ten years prior to the appearance of cattle plague.

It is but justice to say that the healthy condition of the cattle in the byres of Glasgow is partly due to the monthly inspection which takes place under the "Cattle Sheds in Burghs" Act, to the good feeling existing between the local authority of Glasgow and of the counties of Lanark and Renfrew, and their Veterinary Inspectors; and although last, most important, to the regular and systematic inspection of all markets and sale yards in Glasgow by my assistants and myself.

It is not long since the nature of pleuro-pneumonia, epizootica, was one of the bones of contention within the professional circle. A large majority holding the opinion, with the late Professor Dick at their head, that it was non-contagious; but the number who now believe in the doctrine is few. As the profession are (I hope I am not misleading or being misled), I may say, at one as to its contagious character, so I hope ere long will the government of the country be, as to its treatment by legislative

measures. And if so we may yet live to see that blessed period for stock proprietors when epizootic pleuro-pneumonia, like rinderpest, shall only be remembered as a scourge of the past. (Applause.)

And now, briefly, let me draw your attention to the practical examination of veterinary students. Hitherto it has been the universal custom only to apply an oral test to candidates for diplomas of the Royal College, and it is not as yet contemplated to make any fundamental alteration on this principle or to substitute a written for an oral examination. But in addition to the oral it has been decided by the Council of the Licensing College to subject each student, prior to the oral examination, to a practical examination of horses, cattle, sheep, and dogs in their presence. And, gentlemen, I heartily concur in the advisability and utility of the step, and shall do all in my power to assist the examiners in carrying out the programme, and above all endeavour to teach you how to discharge this most important branch of your professional training with credit to yourself and satisfaction to your examiners.

In my capacity of practitioner and teacher of the veterinary art, I am so placed that of necessity, if not choice, I must hold an opinion upon any material alteration which takes place in the teaching and licensing of our students, and I have not the least hesitation in affirming that the practical test will work a mighty reformation. Like most educational reforms, it must of necessity be conservative, and it will to a certainty press the spur closer to the rib of the aspirant to honour and recognition than has hitherto been the custom. And for this reason you, gentlemen, who now listen to me may consider that you have a cause of complaint over and above your predecessors who filled these benches, and have now been admitted within the profession. But, gentlemen, new lines must fall somewhere, and if they have fallen on your shoulders first, rest assured they will descend with greater force upon your successors'.

But, putting present feelings aside, this measure will benefit the student, the profession, and the public. It must be admitted that hitherto the bulk of veterinary students, at the date of receiving their diplomas and entering the profession, have been sadly deficient in practical detail. Some unable to tell the age of a horse, others not positive of the individual limb, far less of the exact seat of the lameness affecting the animal. And whose fault has this been? Certainly not the teachers'—(applause)—but the students' fault, and the system of licensing. The tests of admission to the profession being theoretical, and not practical, your predecessors eagerly seized every opportunity of becoming more and more crammed with theory, but the practical not being in request was left to look after itself; and, accordingly, I repeat the bulk of young veterinarians licensed to practise have been deficient in the practical details,—a deficiency in many instances so apparent as to have been remarked by non-professional on-

lookers. And, gentlemen, I must be allowed to say that this want of practical knowledge has done much to injure our reputation as men of skill, and to shake the confidence of the public in our opinions and mode of treating disease. You now understand then, Gentlemen, that your first examination for diplomas shall be a practical one, and failing it you will not be allowed to present yourselves that session at the second or oral section of the examination of the Board.

Gentlemen, the general appearance presented hitherto by the students of this College at their examination, and the awards given by the examiners have been most satisfactory. Indeed, according to your numbers they have placed you at the head of the poll, and there, gentlemen, it is our fixed determination you shall, if possible, remain. (Applause.) Let the honours which have twice been won by your predecessors nerve you to action; and although the tactics of war will be changed when the battle is again fought, have confidence in the result, for those who led your predecessors to victory are able and willing to guide you. (Applause.) The new order of examination only affects the subjects taught by me, and allow me to say I am perfectly able to cope with the altered circumstances, and when we again meet I shall have the pleasure of explaining in detail my line of procedure.

The Principal concluded his able lecture by an eloquent appeal to the students present to be diligent in the work allotted to them as students, and to avoid those temptations to dissipation presented in a large city like Glasgow.

The lecture was listened to throughout with marked attention, and at the conclusion was greeted with prolonged applause.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

The twenty-sixth meeting of this Association was held at the Medical Institute, Hope Street, on Friday evening, November 11th, 1870.

The chair was taken, shortly after six o'clock, by the President, Thomas Greaves, Esq. There were also present, Messrs. Morgan, Elam, Harwood, Ackroyd (Liverpool), W. J. Taylor and C. Anderson (Manchester), Storrar (Chester), W. C. Lawson (Woolton), Barnes (Tarporley), Whittle (Worsley), Dobie (Birkenhead), and the Secretary.

Letters signifying inability to attend were received from Messrs. Dayus (Dorrington), W. H. Cartwright (Whitchurch), A. Lawson (Bolton), and T. Taylor (Manchester).

Mr. Barnes was nominated for election to membership by *Mr. Storrar.*

The minutes of the preceding quarterly meeting were read and confirmed.

Mr. C. W. Elam then read a paper on "Fractures; their Cause, Symptoms, and Treatment," illustrating his subject by the exhibition of an extensive collection of specimens.

Mr. President and Gentlemen,—The subject I have chosen for my paper this evening is "Fractures; their Cause, Symptoms, and Treatment." The reason I have chosen this subject in preference to any other of the great variety that are being constantly brought under our notice by stock owners for our professional opinions and treatment, is that my attention has for the past four years and a half (during which time I have had under my charge over 1100 horses belonging to the Liverpool Railway Omnibus Company) been more frequently called, and my professional skill and knowledge of anatomy more severely taxed in correctly diagnosing cases of simple fracture than on any other single class of cases that have been brought under my notice, and I am sure of this (and I appeal to the experience of all old practitioners present), that there is not any lameness to which our noble patient, the horse, is subject (if I except the foot) that is so difficult for a young practitioner to diagnose correctly, or one that is half so likely to annoy or perplex him, if not correctly diagnosed, as a simple fracture, more especially of the os coronæ and os suffraginis bones.

In treating of the first part of my subject, viz. the cause of fractures, I think it of importance that we should first glance at the development, structure, and composition of bones, for experience has proved, and chemistry has demonstrated, that the young, but fully developed, animal is least subject to fractures, and when fractured, the most readily cured; but as age increases they are rendered more liable and proportionally more difficult of cure, in consequence of the increase of earthy salts, and the decrease of the gelatineous bases. Bones are the organs of support of the animal frame; they give firmness and strength to the fabric, afford points of connection to the numerous muscles, and bestow individual character on the body. In the limbs they are hollow cylinders, admirably calculated by their conformation and structure to resist violence and support weight. In the trunk and head they are flattened and arched to protect cavities and provide an extensive surface for attachment. In some situations they present projections of variable length, which serve as levers, and in others are grooved into smoothed surfaces, which act as pulleys for the passage of tendons; beside supplying strength and solidity, they are equally adapted by their numerous divisions and mutual appositions to fulfil every movement which may tend to the preservation of the creature, or be conducive to his welfare. According to the latest analysis by Berzelius, bone is composed of about one third of animal substance,

which is almost completely reducible to gelatine by boiling, and two thirds of earthy and alkaline salts. The special constituents of bone are present in the following proportions:

Cartilage	32·17
Blood-vessels	1·13
Phosphate of lime	51·04
Carbonate of lime	11·30
Fluate of lime	2·00
Phosphate of magnesia	1·16
Chloride of sodium	1·20
	100·00

These constituents are intimately blended, so that if a bone is burned its shape is preserved by the earthy residue, though liable to crumble on the slightest touch; and if a bone be steeped for some time in dilute hydrochloric acid, the earthy substance dissolves out of it, and the animal basis, retaining the perfect shape of the bone, may be twisted about in any form. Considerable diversity exists in the constituents of bones at different periods of life. In young animals there is a large proportion of the gelatinous basis, and comparatively less of earthy matter of the earthy salts; the chief is always true earth or phosphate of lime, but this is far more in excess of other salts in very young animals than in adult ones. Carbonate of lime increases with age. The proportions of earthy and animal matter vary singularly, according to the food of which the animal partakes. In herbivora there is far more carbonate of lime than in carnivora; and in disease remarkable changes occur, as in osteo porosis and cachexia ossifraga, arising from some marked deficiency of the salts of lime in the food or water, or some diseased or morbid condition of the bone itself.

Having thus briefly glanced at the structure of bone, I will at once proceed to the more practical part of my paper. It is according as we carefully and correctly diagnose cases of lameness, whether arising from fracture or other causes, and the advice we give, as to treatment, &c., that a very large proportion of the success or failure of every veterinary surgeon depends; and I have no hesitation in saying, that there is no question on which you can obtain such a diversity of opinion from qualified veterinary surgeons as you can in cases of lameness. To illustrate this, I will, as briefly as possible, give you one striking example.

About two years ago, one of the horses belonging to the Omnibus Company was taken up by the Society for Prevention of Cruelty to Animals, for being lame. I had been at the stable the day previously, and the horse was not lame then. I examined him after he was taken up, and feeling sure that the lameness was recent and had occurred at work after the horse had left the stable, I thought it was one of those cases that did not fairly come under the Cruelty Act. I at once had the horse examined by Mr. Gilbert

Heyes and Mr. Morgan, and those gentlemen concurred in my opinion, that the horse was suffering from slight lameness in the shoulder, of a very recent character. The society, seeing that I was defending the case and also getting professional opinions, had it adjourned until the following day, that they might have their two veterinary surgeons to examine the horse. On the following morning, before going into court, Messrs. Heyes and Morgan, along with myself, again examined the horse, and all concurred that he was much better for the day's rest, and the lameness was but very slight indeed, and we were of opinion that it would be quite sound in a day or two without any treatment being adopted, and gave evidence in court to that effect. The two veterinary surgeons for the society both stated that the horse was suffering from chronic navicular disease, thickened sheaths of tendons, &c., and must have been lame for some time, was suffering great pain, and was unfit for work in consequence. The magistrates decided in favour of the society, and inflicted a penalty of, I think, 20*s.* and costs. The same and following day I sent the horse, with a note, to six other veterinary surgeons of Liverpool and neighbourhood, asking their opinion of the lameness. They all, with one exception, said the horse was only very slightly lame, but it was in the shoulder; the exception thought it was in the foot. However, by the time the horse had visited the different veterinary establishments he was perfectly sound and ready for work, and has been working regularly ever since. I omitted to say that we had the horse's feet carefully examined, and found them large, healthy, fine open feet, and free from any disease. I would suggest that it is high time that something should be done by veterinary surgeons individually, and by this and similar associations, to remedy this state of things.

I will now proceed to lay before you a few cases of fracture that I have now (or have had lately) under treatment.

On the 7th of October, I was sent for to examine a horse that had been brought in from work very lame. It was a big, powerful bay mare, aged (1917 F), and had only been purchased about two months. Symptoms were, standing quite straight in stable, but putting greatest weight on sound leg. I had her gently walked out of the stable; her gait was very peculiar, but to me indicative of a fracture of the pelvis. She advanced the leg without any difficulty, and straight; but in doing so carried it too far forward, as if done involuntarily, the leg being thrown slightly outwards in backing; had great difficulty in lifting the leg, dragging or trailing the foot on the ground in trying to get it back; no difficulty or pain was caused by my lifting or moving the leg freely about. I then carefully examined the foot to see that the nails were right, and that no foreign body was in it, a precaution the importance of which cannot be over estimated; in all cases of lameness, before giving an opinion, find that the foot is all right. I next pressed and manipulated the hip-joint and pelvis, but failed to hear or detect the slightest indication of a fracture. I then examined the pelvis

per rectum, a practice I almost invariably adopt before treating any case of hip or pelvic lameness, so as to make sure that there is no fracture; and I am thoroughly convinced, from extensive observation and practice, that in all injuries and fractures of that bone it is the surest and safest mode of detection. In this case I had not the slightest difficulty in detecting a fracture of the right innominate bone at the anterior parts of symphisis pubis, also of the ischium near the acetabulum.

Treatment.—Had the horse tied short by the head, so as to prevent its lying down; a high-heeled shoe put on the foot of injured side, gave a mild dose of physic, and applied a powerful cantharadine blister on the skin, covering the injury. Food to be nutritious, but soft. A month has elapsed without any further treatment. I had the horse walked out a few days ago, and found it much improved, and on examining the pelvis per rectum found marked indications that nature was doing her work well in repairing the injury. I generally find in such cases that nature takes from ten to fourteen weeks to repair the breach, and render the horse fit for work. Slings I never use, preferring for the first month to keep the horse standing and as quiet as possible, leaving the rest to nature. After that time I allow the horse to lie down at pleasure, and find no ill effects from doing so. Should it get down during the first fortnight there is great danger of the bones becoming displaced; but I very seldom have any difficulty in keeping them standing the required time. However, I am treating such a case just now; it was a fracture of the neck of the ilium, near the acetabulum. After a week or ten days the horse got down, and in getting up a rather serious displacement took place, the neck of the ilium gliding inwardly, the antero-inferior spinous process and body of bone being pulled downwards by the action of the iliacus and other muscles attached to it, giving the horse a very one-sided and deformed appearance. The animal being a valuable one, and as I was satisfied that the acetabulum was in no way interfered with, and the deformity being no objection in an omnibus horse, I decided to continue treatment, knowing well that in time the muscles would adapt themselves to their altered circumstances. The horse is now quite sound, and nearly ready to resume work, three months having elapsed.

On the 19th of last month I was sent for to examine an aged brown mare (1942 F.) that had been brought in from work lame. Symptoms:—She was standing in the stable without any appearance of injury, was feeding, and standing on both hind legs, the greatest weight being placed on what proved to be the sound one. In walking gently out of stable and in the yard, the lame leg was carried well forward more than is natural, and appearing as if involuntarily or spasmodically done, the toe and leg being thrown outwards. Finding the foot all right I carefully manipulated the pelvis, when a distinct crepitation could be heard. I then examined the pelvis per rectum, to ascertain its precise locality, which I found to be a rather serious fracture of the ischium with displacement, near

the symphysis. One symptom that I almost invariably find in all such cases is a marked increase of heat in the rectum. Treatment the same as in the case previously referred to, with the exception of no external application.

On the 2nd of this month I was sent for to examine a grey horse, aged, (1964, O. S.) that had been taken from his work very lame. Symptoms:—Stood quite straight in stable, no apparent difference in shape of pelvis, and did not appear to be suffering much pain. There was a peculiar involuntary twitching of the muscles of the near hind quarter. When made to walk, did so very reluctantly; advanced the leg well, but hesitated to put it down; but, after once putting its weight on it could walk slowly very well, throwing the toe and leg slightly outwards. When made to walk fast, refused to put the lame leg down at all, and walked on three; backed very well, giving way slightly when placing the full weight on the leg. On external manipulation of pelvis a distinct crepitation could be heard; examined the pelvis per rectum, and found a fracture of the left innominate bone at the anterior part of symphysis pubis near the acetabulum.

Treatment.—Same as in previous case.

Cause.—In no case have I ever been able to get any information from the driver or groom, merely that the horse suddenly dropped lame. In my opinion they are caused through the horse being suddenly pulled up, and endeavouring to stop the heavy omnibus as suddenly, which is unfortunately supplied with a very imperfect break, causing a greater strain on the pelvis than it can bear, and breaking it at its weakest points.

I will next call your attention to the specimen of a pelvis on the table, marked No. 12 (1595 O. S.). It was that of a brown horse (aged), and was fractured about twelve months ago. I treated it the same as the other cases named, and in a little over three months the horse went to work, and continued doing so for about six months, after which it had a sickness and died. The next case is marked No. 6; it is the upper third of the femur of an aged roan horse (419 O. S.), that I was called upon to examine. The groom informed me that the animal had done its usual work all right the night previous, and he had not noticed its being lame until he was bringing it out of the stable in the morning to be groomed. The symptoms were as follows:—When I saw the horse it was standing on three legs, holding the injured leg slightly off the ground, and apparently suffering great pain. There was a slight swelling of the leg below the hock. When led out of loose box it put the foot flat on the ground; but in carrying the leg forward it appeared to dangle as if loose, and not under proper control; backed very well, but whenever standing always slung the leg. I was very much puzzled with this case, and was several days before I could satisfactorily make up my mind as to the precise nature and extent of injury. I first satisfied myself that the foot and pelvis were right. I also manipulated the leg carefully, but failed to hear any crepitation. The quarter appeared to be wasting from pain. I expressed an opinion that there was a frac-

ture of the head of the femur, and, seeing no chance of recovery, had the horse destroyed.

I have also had several cases of fracture of the pelvis at the symphysis pubis; and when the age and value of the animal warranted it, I have treated them in the same manner with success. I have observed that all fractures of this character have occurred in mares,—caused by the animal being suddenly pulled up, and falling heavily on its haunches; the ischium comes in violent contact with the ground, causing a fracture. The symphysis in mares being the weakest part, in consequence of its imperfect union, gives way.

The next case that I will call your attention to was an aged chestnut mare, that was brought to my hospital from work very lame on the near hind leg. It was with very great difficulty indeed that she was walked there. Symptoms when I first saw her:—She was standing on three legs, holding the injured one up slightly from the ground. When made to walk, would place the foot of the injured leg flat on the ground, but refused to place any weight on it, and when she chanced to do so she would spasmodically jerk it off the ground and hold it, evidently suffering the most acute pain. Having satisfied myself that the foot was right, I next carefully examined the pastern. There was not the slightest swelling; but when I applied pressure or slightly twisted the joint, the mare jerked the leg violently away, so much so as to be in great danger of falling over. I could not hear the slightest crepitation. Diagnosis:—A simple longitudinal fracture of the os suffraginis. Treatment:—Applied a wet woollen bandage as tightly as possible round the pastern. I next put a strong wet linen bandage tightly over that, gave a gentle dose of physic, ordered soft food; the bandages to be kept constantly wet, and the mare to be tied up by the head, so as to prevent her lying down. I did not remove the bandages for a week, to see what progress, and had them at once replaced. In about a fortnight she appeared much freer from pain, and showed a disinclination to place some slight weight on the injured foot. In another week I removed the bandages, and applied a strong cantharides blister all round the bone, and repeated it in a week. In six weeks the animal was discharged sound, and put to regular work. In about six weeks after she was again brought to me, very lame on the opposite leg. The symptoms were as nearly as possible the same as on the first occasion. The mare being a very old one, and the fracture appearing to be of a more serious character than the former one, I decided at once to destroy her. The bones are now before you. The first fracture you will see was a simple longitudinal fracture, and from the fact of its extending into the joint, it will be easily understood why the animal suffered such acute pain. The second fracture was of a similar character, and more complicated, as not only was there a longitudinal fracture of the os suffraginis, but also of the inferior third of the metatarsal bone.

You will also see on the table several specimens of compound fractures of the os suffraginis, both of the fore and hind legs, which are easily diagnosed but admit of no treatment. Fractures of the

os coronæ are not so frequent in my practice, but if of a compound character I have the animal at once destroyed; if only of a simple longitudinal character I treat them the same as fractures of the os suffraginis, and with the same success, the symptoms being precisely the same. A very good case came under my notice about a month ago; an aged grey mare was brought in from work very lame in the near fore-leg. After carefully examining the foot and leg, I came to the conclusion that there was a simple longitudinal fracture of the os coronæ. The mare being old, and having large side bones and extensive body deposit all down the outside of both the os suffragines, and curving inwards so as to interfere somewhat slightly with the action of the flexor pedis tendon when at work, I had her destroyed, not that I thought there would be any difficulty in treating the fracture, but she was not worth it. The *post-mortem* appearances proved that my diagnosis was correct, and after examining the bones, I have no doubt that you will concur in my prognosis.

Causes.—In hind pasterns, concussion from being suddenly pulled up; in the fore from a false step. Fractures of the os pedis I have never seen, but I have had several cases of fracture of the os naviculare, but in all instances having known that the horses were previously suffering from navicular disease, I did not think it advisable to treat them, and at once had them destroyed. Fractures of the metacarpal, radial, metatarsal, and tibial bones are not unfrequent in my practice, but as they are almost invariably of a compound character, and arise from one cause, viz., being kicked by other horses in the stable, the Company having no stalls but swinging bails, and the great difficulty there is in bringing the broken bones into apposition, also the greater one in keeping them so, I have never yet been able to recommend the treating of a single case. I have placed several specimens on the table for your inspection.

The next case of fracture to which I will draw your attention is with me of very rare occurrence; it was a fracture of the inferior third of the tibia, commencing in the articulation and taking an oblique direction to outer and upper part. The horse was first seen lame in the morning, not being able to put its foot to the ground, and evidently suffering great pain. There was no swelling about the bone, but the hock joint was much swollen, and in moving it about I could hear a slight crepitation. Considering the age of the animal, and the difficulty of binding the bones sufficiently tightly together so as to favour union, also the important character of the joint involved, I had it destroyed. Fractures of the femur are, I believe, of comparatively rare occurrence; there is a specimen on the table of one fractured at its shaft in an oblique direction. The horse had been thrown down whilst at work, and after getting up was noticed to be very lame, and sent to the stable, where I shortly afterwards saw it. It was standing, but evidently suffering great pain, the thigh being swollen to twice its ordiuary size. I got a man to move the leg gently whilst I applied my ear to the part, when it was evident that a fracture with displacement had taken

place about the centre of the femur, the great swelling doubtless arising from rupture of the femoral artery. I had the horse at once destroyed, as I could not see any prospect of cure.

The next and last case that I will call your attention to is one of a very peculiar nature, and occurred in my practice about ten months ago. I was requested to unnerve a bay mare that had been suffering from navicular disease for several years, and was becoming unfit for work in consequence. I suggested two objections, 1st, that the disease had probably advanced too far for the operation to be of much value; 2nd, the risk of such an animal breaking its back during the operation; however, I was requested to operate. I had the horse brought to the hospital and placed in a loose box, and it was not long before she was lying down. I at once took advantage of this, and put a man on her head to keep her down whilst I had the hobbles put on and had her legs drawn together and secured. I operated quickly and satisfactorily, the horse struggling a little on the dividing of each nerve, but hardly so much as is usual. After removing the hobbles she attempted to rise, but only succeeded in raising her fore-quarters; however, with a little assistance, I got her up, when it was at once apparent, from her staggering manner, that a fracture of the vertebræ had taken place, she having to be propped against the wall to prevent her falling down. Of course I had her destroyed, and found the thirteenth and fourteenth dorsal vertebræ fractured at its body and spine. This was a clear case of fractured vertebræ from struggling during an operation, and in my opinion the majority, if not all such cases, occur in the same way, and not, as was supposed, in the act of casting.

When accidents of this nature do occur it is fortunate for the veterinary surgeon if he be a man of already established reputation, and also if he be serving an intelligent educated client, to whom he can explain the unlooked-for accident, and who will accept his explanation as satisfactory; but should he be a young practitioner who is striving to attain an honorable position, it does not signify how clever he may be, or however free from blame he may know himself to be, if he be so unfortunate as to be operating on an animal belonging to an unreasonable man who will accept no explanation, but demands compensation for the loss of his horse,—such a position, I say, is a very difficult one for any young practitioner to be placed in; and however well he may get out of it, he will not fail to feel its blighting effects for years afterwards. I will take this opportunity of calling your attention to that valuable society whose aims and objects ought to commend themselves to every veterinary surgeon, whether in practice or out of it; I mean the National Veterinary Defence Association, which has already won for itself a name in the successful defence of good and true men, who, through no fault of theirs, were placed in unfavorable positions. I hope these few cases I have laid before you will not only have been interesting, but of some future value to a few if not all of the members present.

Several of the members related cases of fracture that had occurred in their respective practices. *Mr. Storrar* and *Mr. W. J. Taylor* exhibited specimens. That presented by Mr. Taylor was allowed by the members present to be almost unique in the annals of veterinary surgery. It was fracture into several pieces of the seventh cervical vertebra. The subject of the case was stated to be a thoroughbred mare, seventeen years old; whilst galloping, misplaced her foot and came down a "regular purl" on to the occiput; she arose, shook herself, trotted a few paces, became giddy, and commenced kicking violently, fell again, and once more rose, performed a few gyratory movements, and fell to rise no more. On visiting, Mr. Taylor found her almost unconscious; she evinced no pain on pressure to the spine, except at its lower part, breathed stertorously, but could swallow. Diagnosis: concussion of brain, with probability of fracture of some part of spinal chain. In opposition to Mr. Taylor's unfavorable prognosis, the owner desired him to treat her, which wish was acceded to; the mare lived about a week after the accident. A *post-mortem* examination revealed only the fractured specimen exhibited, with a little effusion upon the adjacent portion of the spinal cord.

The President considered that it was the duty of the veterinary surgeon to endeavour to reduce to a minimum the mediate and immediate causes of fracture, as much as to repair bones once broken. This he may do by paying due precautions to shoeing, by attention to the fitting of harness, by advocating proper appliances to carriages, and by many other means that come within his province. He urged the adoption of these precautionary measures, inasmuch as a large per-centage of fractures must necessarily have an unsatisfactory termination, the difficulties of securing that amount of absolute rest which is essential to the repair of these structures being often insurmountable; and also the great probability that the commercial value of the animal will be deteriorated far beyond the equivalent of his cost for keep whilst under treatment. He thought that in all cases where fracture without displacement was determined, or even apprehended, the surgeon should withhold his sanction for the horse being put to work full six weeks after the infliction of the injury.

Mr. Storrar's opinion accorded with that of the President as to the necessity of enjoining complete rest for several weeks after an injury which may have probably caused undisplaced fracture. He considered that in these cases the bones were kept in apposition by the integrity of the periosteum being maintained, as well as by a certain dovetailing of the fractured portions of bone, the latter remaining intact so long as no lateral or exceptional movements occur to produce their disunion. He thought that a few days subsequent to the injury was a most dangerous period in these cases, for the reparatory material thrown out between the broken surfaces of the bones had a tendency, by increased pressure, to weaken the periosteum, the natural bandage, as it also had to dissever the dovetailing of the splinters.

Mr. Morgan deprecated the use of slings in the treatment of fractures. He was surprised that Mr. Elam had not found and commented upon irritative fever as a concomitant of fractures, especially in those involving a diarthrodial joint, as some of these cases described had done.

Votes of thanks were passed to the essayist, Messrs. Storrar and Taylor.

The Honorary Treasurer submitted a financial statement for the year.

RECEIPTS.	£	s.	d.	DISBURSEMENTS.	£	s	d.
Balance from last year	11	6	9	Postages.....	0	3	6
Subscriptions and arrears ...	10	10	0	Rent of Medical Hall	5	0	0
				Gratuity to attendant.....	0	10	0
				Sundry disbursements by Secretary for postages, circulars, stationary, providing teas, &c. &c. (as per book)	5	9	0
				Cash balance in hand	10	14	3
	£21	16	9		£21	16	9

(Signed) THOMAS HARWOOD,
Hon. Treasurer.

The Treasurer's report was approved.

Votes of thanks to all the retiring officers were accorded, and having been acknowledged, Mr. Storrar, of Chester, was unanimously elected to fill the presidential chair for the ensuing year. *Mr. Reynolds*, on resigning the office of Honorary Secretary, proposed Mr. Lawson as his successor, which was seconded by *Mr. Morgan*, and unanimously carried. *Mr. Lawson* expressed his willingness to fulfil the duties of the office.

Mr. Harwood was re-elected Honorary Treasurer.

Messrs. Greaves, Whittle, and Reynolds were elected Vice-Presidents.

RICHARD S. REYNOLDS,
Hon. Secretary.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE Annual Dinner of this Association took place on Wednesday evening, the 26th October last, at the Athole Arms Hotel, Dundas Street, Glagsow.

The President, Alexander Pottie, Esq., occupied the chair, whilst the duties of Croupier were discharged by Mr. D. Maclean, Royal Artillery.

Present: Professors Williams (Edinburgh Veterinary College), McCall and Wilson (Glasgow Veterinary College); Messrs. T. Greaves (ex-President Royal College Veterinary Surgeons), Anderson, senior, Anderson, junior, Cockburn, junior, Erskine, Mitchell, Newlands, Findlay (Glasgow), J. Bryce (Stirling), A. Robinson (Greenock), Cunningham (Slateford), Sharpe (Hamilton), Blackie (Bellshill) Kerr (Beith), J. Macdougall (Colgraine), J. Mitchell (Musselburgh), Hay (Kirkintilloch), John Donaldson (Paisley), James Donaldson (Kilmalcolm), P. Walker (Ardrossan), Nottage and A. Lawson (Manchester), Tennant (Maybole).

After the cloth was removed the *Chairman* proposed "The Queen," "The Prince and Princess of Wales, and the other members of the Royal Family," to which royal toasts a due response was given.

The Chairman, in proposing "The Army and Navy," said that he was glad they had amongst them one who was connected with the former branch of our defensive services, and was sure that if that gentleman discharged his military duties with as much zeal as he had done the duties of the Secretary of their Association, his name would be well known as a most faithful and efficient servant of his country. It argued well for the prosperity of the Association that they had Mr. Maclean for their Secretary. He coupled the toast with the name of that office bearer. (Applause.)

The *Croupier* in reply said, I rise as a representative of our profession in its warlike aspect to respond to the toast which Mr. Pottie has so kindly proposed, and to thank you, Gentlemen, for the flattering reception it has met with from your hands.

Our navy in its present very efficient condition, with its latest architectural improvements, and weapons of scientific invention, is a branch of Her Majesty's Service, which this country is justly proud of; by it we are enabled to prevent the hostile intrusion of any foreign potentate to our shores, and to protect that great amount of wealth, and vast fleets of British merchantmen which float on every sea and ocean of our globe. As regards our army, we as a profession feel all more or less interested in it, simply because it affords employment for about—if my memory serves me—130 of our professional brethren. For some years the military veterinary surgeon did not hold that rank which he as a professional man, I think, was entitled to enjoy. The Royal Warrant of 1859 was supposed to improve the position of the army veterinary surgeon, and redress his grievances, and to a certain extent (continued the speaker), I must candidly confess it has done so, but I am sorry to tell you that that said Royal Warrant, although eleven years have passed since its promulgation, is, in some respects, but languidly carried out; slowness of promotion is our present grievance, and we have good occasion to grumble. I have no doubt, in the ordinary course of events, our worthy Principal, Mr. Wilkinson, with his usual very great zeal for the future welfare of his subordinates, will be able to

prevail on the reigning Government to introduce some satisfactory remedial measure.

War is an old institution, in fact it is one of the oldest on record, and much as every one must dislike and detest it, the late aspect of affairs on the Continent proves that war is a custom which will not die out in a day.

As a nation we are rich enough to be worth robbing, prosperous enough to excite envy, and we ought to be strong enough to make ourselves respected among the civilised nations of the world. (Applause.) That strength lies in your army and your navy. You grumble now and then over the four or five and twenty millions a year which those services cost, but every military man has maintained that it was the reverse of economy not to keep our war departments in an efficient and healthy condition.

I have to thank Mr. Pottie for the eulogia he has passed on my character, and I hope that I shall be able to retain the reputation he has so publicly given me as your Secretary during my term of office.

The Chairman then gave the toast, "Success to the West of Scotland Veterinary Medical Association." In his speech he remarked that the association had now existed for more than ten years, and that before that period no society of the kind was in Scotland, nor in England either; that Glasgow had taken the lead in this respect, and that they were able to congratulate themselves that in almost every great city in Britain there is a veterinary association. It is well that this should be so. We know that union is strength, and that the conjoint efforts of the profession may, if directed to right purpose, work a reformation. Single individuals may cry out as they like; they were never heard, for they wanted unity. What we ought, therefore, still further to seek is union amongst the members of the profession. I am glad to say that our association in Glasgow has taken the initiative in this regard in the west of Scotland. (Hear, hear.) But besides being of advantage to us collectively, a society of this kind is of utility to us individually. We all know that there are difficulties in our way with regard to practice. None of us are in practice for any length of time, without encountering difficulties either in the way of a legal dispute or in connection with our cases. Now there is nothing (the Chairman said) that I know that gives more encouragement than to obtain the advice of the fathers of our profession. That is to be secured principally by our meetings in such an association as this. Regular discussions tend to stimulate inquiry, and this is all the more necessary from the fact that as practitioners we are often inclined to believe that when we leave our college, the scientific parts of our profession should almost be set aside. We do consult our *Veterinarian;* but as to our class books, they are, I am afraid, seldom referred to. I am glad to say that discussions with this object in view have regularly taken place at our meetings. The attendance, of course, has not been

so good perhaps as we would have wished; but this arises from the fact that members may be called upon at any moment to the discharge of duty. We are like the soldiers in the present great war—we must hold ourselves in readiness to go whither our services are required. Besides the advantages just indicated, there is another which I consider is before them all. Our connection with the Association promotes brotherly feeling—a feeling which I am sorry to say does not reign supreme in our profession. It is quite true that jealousy is more or less characteristic of all human pursuits; but it is a weakness which every effort should be made to suppress. Our profession is of such a nature that we often fall into error, and therefore we are unwise if we only allow ourselves to hear the opinions of one or two individuals. We should not hold our own opinions with too great tenacity, but be ever ready to weigh those of others. (Hear, hear.) In this way only can we expect to make progress and arrive at sound conclusions. I cannot say we have shown very much progress in the way of promoting any particular object of the profession. No doubt, as a society, we have done a great deal to benefit ourselves; but public questions have not, as it were, come before us, and we have not published much to the world of our success in any particular department. But I trust that we shall yet be able to point to good results in every direction. This toast is to be coupled with the health of Mr. Anderson, whom we may with justice designate the father of this Society in Glasgow. (Applause.) He was, if not the originator of the Society, present at almost every meeting, and has all along taken a deep interest in the welfare of the profession, particularly in connection with the Society. I am sure you will all cordially join with me in wishing that our friend may have long life and prosperity, and that he may be spared to see this Association rise to be among the strongest and most active bodies not only in Scotland but in Britain. (Applause.)

Mr. Anderson said that he really did not know where to begin his speech, the President having fairly put him out by the kind way in which he had spoken of him. Mr. Pottie had said that he (Mr. Anderson) was the originator of this association. No doubt he had taken a great deal of interest in getting it up, perhaps too much, sometimes. Indeed, he feared that in his anxiety for its prosperity he had more than once hurt the association. It had, however, prospered, and was now nearly in its teens, having passed through all the diseases incident to young associations. He thought that it had, as it were, passed the stage of chin cough. (A laugh). From what he saw that night, it had received fresh blood. He had no doubt it would rise to a vigorous maturity, and bear excellent fruit. It was fair, however, that he should state that had it not been for the exertions of such friends as Robinson, Sharp, and Cockburn, the association would not now be what it was. He did not believe there would be such a company as he had the pleasure of addressing, had it not been for

their young friend Mr. Maclean (applause), who was going to show the way in which things were done in the army.

He always thought that the society would be the better for young blood. A proof of this was apparent in their having got Mr. Maclean as their Secretary. He hoped that if duty called him away, Mr. Maclean would find some young friend equally experienced and active to succeed him.

He trusted that the association would go on prospering from generation to generation, and that the veterinary surgeon who did not belong to such a society as this would not be considered worthy to be employed—that, in a word, the fact of his being a member of a veterinary association would be a certificate of competency to him. (Applause).

The Croupier said: The next toast on the roster I have to bring to your notice is "Our Schools and their Teachers." And when we find the principals of our two Scotch Veterinary Schools sitting here, having so kindly honoured us with their presence on this festive occasion, I have to request that you will be good enough to fill and drink a bumper.

Veterinary education in this country is neither so practical or so elaborate as the teaching of the veterinary schools on the Continent, simply because our institutions are unaided by government, and are purely the result of private enterprise; but when we take into consideration their limited curriculum, and the many difficulties they have had to contend with, I think we ought to be truly thankful for the knowledge they have given us, and the position in which we are placed. Great room for improvement still exists, and there is now a tendency to progress rapidly; what with preliminary examinations before entering our schools, and the long and much talked of practical examination before our student obtains his diploma, omens for us in future a *locus standi* in the scientific world we have not yet attained. But independent of these examinations which have lately been introduced, our schools within the last few years have advanced in their teaching most materially, more particularly their pathological teaching, and it is to be hoped--when we can decide among ourselves as to the expediency of our profession being united—that they will then combine, and extend the prescribed period of their teaching to at least three sessions.

I am to couple with this toast Professors Williams and McCall. Professor Williams came among us personally known only to a few, but professionally he had, in connection with the Yorkshire Veterinary Medical Association, and the Highland and Agricultural Society's Court of Veterinary Examiners, established a reputation of no mean capacity, so much so, I believe, that he was specially selected to fill the post he now occupies. His teaching is clear and distinct, sound and practical, is successful and appreciated—the great number of students attending his classes last session, and the creditable appearance they presented before the Examining Boards, prove the truth of my remarks.

I am now about to tread on very delicate ground, so I must proceed cautiously. Most of you are fully aware that disturbances of a very curious nature occurred last session within the walls of the Edinburgh Institution, and we all trust, for the future well-being of that school, that these disturbances are now at an end. Those who know the substantiated facts of this case, not only truly sympathise with Professor Williams in the peculiar position which he is placed, and exonerate him from all blame in this matter, but deplore that he has been obliged to bear in silence such a heap of uncalled-for newspaper abuse. From what I saw at a meeting of the Edinburgh Town Council, the animus there displayed, makes me inclined to believe that our old Alma Mater of the north is in peculiarly unmanageable hands. I may be bold in expressing when I tell you that I honestly think the Edinburgh Veterinary College and its affairs are made a scape-goat of for political purposes. It is also lamentable to find the gift which Professor Dick so generously left to us—the profession—for our benefit, for our good—being frittered away in useless litigation.

The removal by death of Professors Dalzell and Strangeways was a sad blow to the Institution, not only to the Institution, but to its present principal as well, for since their demise his bed has been one of thorns; so let us all join in wishing that in future his bed will be a bed of roses.

Professor McCall we have known most intimately for years, and I am sure we, each of us individually and collectively, are delighted to see him again taking an interest in the doings of our association. From his very entry into the profession up to the present day, he has had a most distinguished career. Selected by Professor Dick to succeed Mr. Gamgee, he began teaching in Edinburgh the year he obtained his diploma, and it is needless for me to point out to you how well his work was done, for we all know that his first course of lectures was attended with marked success, not only in his teaching, but in the way he associated himself with his students in that bond of affection which is so pleasing to see existing between the teacher and the taught. And I may add, that for the thirteen years I have known him I know not of a single instance where that bond has been severed.

As one of his original pupils, I thank, and I am sure my old fellow-student, our president, will join me in publicly thanking, Professor McCall for the many acts of kindness he at one time, as our teacher, so liberally bestowed on us.

The reception his introductory lecture met with yesterday, surrounded as he was by so many friends, makes me say, with all due respect to the other teaching bodies, that they have found in his young but rising institution a most powerful rival.

I could expatiate for a much longer time on Prof. McCall's ability and many qualities, but being a personal friend of his, any further

remarks of mine might be looked upon as empty adulation. So let us drink success to the London, the Edinburgh, and the Glasgow Colleges.

Professor Williams felt very proud to be in the position of returning thanks for the Edinburgh Veterinary College, and to find that his name was coupled with the toast. Mr. MacLean had said that he (Professor Williams) was personally known to but a few of the company. That was very true; but still there were present gentlemen who knew him well before his appointment to the Edinburgh Veterinary College, and who were the means of persuading him to accept that appointment. Little did he think when he accepted the professorship that such troubles as he had met with during the last two years were in store for him. He was glad to think that, notwithstanding these troubles, the Veterinary College of Edinburgh now lived as warmly in the memory of the old students as it did in the days of Professor Dick. He was not going to dwell upon his troubles; he would trample them under foot. He had been harassed, annoyed, and worried, by what Mr. Maclean had been pleased to call the extreme party. Pity it was that he had been so; but happily he had been honoured with the sympathy and support of the majority of the Edinburgh Town Council. That section thoroughly understood the state of affairs, and thoroughly sympathised with him in his endeavours to make the teaching of the Veterinary College of Edinburgh equal to what it was in the past. He was not the man to see the teaching quietly deteriorated year after year. He would not say anything against anybody, but he was bound to see that his pupils should receive the best teaching which the times could afford. So long as his students did not receive such teaching he would sympathise with them most strongly, and support them in every legal way to obtain what they had paid for. He wished to be excused for being rather warm upon the subject. If he had not had a constitution of iron he should, ere now, have followed his predecessors Dalziel and Strangeways to the grave. But he was in good health, and prepared to undertake the duties of next session with that delight he felt in the teaching of his students. He agreed with Mr. Maclean that the teaching of their schools, whether of London, Edinburgh, or Glasgow—he placed them all upon an equality—was too unphilosophical, and needed very great reformation. All the schools should consult with one another, and endeavour to do something better than they had done in the past. Too much time was wasted in lecturing, and too little given to clinical instruction. He also thought that two winters were too short for teaching the students anatomy, physiology, and all the branches required. But it was wonderful how much was accomplished; and the great majority were, in the opinion of their examiners, qualified to practise. Let us all hope that very soon there would be an extended curriculum. As to veterinary politics, he did not think that the apprenticeship clause should ever be enforced. But at the same time he thought

the different colleges should make this distinction, that the gentlemen who came to the College with a certificate of having served a pupilage with a qualified veterinary surgeon, might be allowed to present themselves before the Board of Examiners, say, after two sessions of study, and that those who could not produce such certificate should not be allowed to go up for examination for at least another year. In that way they might compromise the matter. He could assure them that he should object, and do everything he could to oppose the apprenticeship clause, whilst he would be willing to accept the compromise he had suggested. Then they were going to have a practical examination. They had the Highland Society, which had introduced this for some years, and a gentleman present had conducted this examination. So far it had been satifactory—not satisfactory to the pupil, but satisfactory to the profession, because it had urged upon teachers the necessity of imparting clinical instruction, and because students had known that at the end of the session they would have to undergo a certain test. It had made them work. It had not been a matter of lecturing, but a matter of practical administration in the art. The practice was looked upon as unworthy of the student's consideration, whereas now, both teachers and pupils understood the necessity of working up the practical part of the profession; for, after all, the profession was not worth one pinch of snuff without practical knowledge. He disagreed with Mr. Maclean, when he said that the schools should receive Government support. He thought the schools should be self-supporting. So long as they were in that state they would have teachers who would work, and let the best school, whether of London, Glasgow, or Edinburgh, have the greatest success. That success could not be obtained by Government patronage, but by the honest hard work of the teachers. (Applause.) He now approached the question of preliminary examination. They were all aware that the Edinburgh Veterinary College had been the last to institute educational examinations. He had objected to preliminary examinations, not in principle, but in matter of detail. He still objected to them so long as the teachers of the college conducted the examinations. He held that any preliminary examination of students conducted by the teachers was a farce. He would never join in that farce, for he believed it was a farce which would terminate some of these days in a tragedy to their profession; therefore, so long as the teachers of the colleges conducted these examinations, he would never consent to their being instituted at the Edinburgh Veterinary College. Fancy a man examining students from whom he received his daily bread! The examinations in Edinburgh would now be conducted by the masters of the High School. It had been arranged that, upon the Friday following, the directors of the High School and the other masters would conduct, for the first time, the educational examination of the students of the Edinburgh Veterinary College. In this way the examination was put beyond the influence of the

teachers. The masters of the High School would reject or admit as they thought proper. If a man was not deemed fit, according to their opinion, to join the profession, he was left out. He (Professor Williams) had spent a good deal of time about this preliminary examination. In the Town Council of Edinburgh, with all its faults, you would find a majority of sensible men, and as a body he must speak of them with the highest respect. The Trustees of the Edinburgh Veterinary College were surprised at the modesty of the demand of the deputation from the Royal College of Veterinary Surgeons; they would have gone much further; they would have instituted a classical examination. In consequence of the proposals made by the deputation, he, and those who acted with him, put themselves in communication with the other veterinary schools, and they were led to suppose certain things would be done. These communications, however, resulted in nothing. As he had said, their first examination was on Friday next. Not one word from the London Veterinary School whether any man had been rejected—not one word from the Glasgow School had been received. So long as their schools were apart, so long would their schools be short of what they ought to be. But whenever their schools were united for one object, namely, the elevation of the members, they might expect the profession would be what its most ardent friends desired. He again thanked them for the very kind manner in which Mr. Maclean had proposed, and the company had responded to the toast of his health, and associated his name with his *alma mater*. He trusted that he should for a long time to come be at the head of that college, and that the more they knew of him the better would they understand one another.

Professor M'Call rose with great pleasure to respond to that part of the toast which might be said to be connected with himself and the institution over which he had the honour to preside. Three years ago he instituted a preliminary examination of his students, when no pressure was brought to bear by either one body or another. This preliminary educational test he had conducted up to the present moment. About a year ago, when the matter was broached by the Royal College of Veterinary Surgeons, he voluntarily consented to hand over *in toto* the power not only of examining his students, but at the same time of appointing the board. This was agreed to by all the students. Professor Williams drew out an agreement to the effect that the High School teachers should examine the students of the Edinburgh College, and the teachers of the High School, Glasgow, should examine the students of the Glasgow College. He (Professor M'Call) looked over the document and returned answer that he was willing to accept of it. After having entered further into this matter, which showed that there had been a misunderstanding between Professor M'Call and Professor Williams, the former said, to bring the whole matter into a nutshell, he was perfectly agreed to submit the students he had examined and admitted to be tested by the teachers of the High School of

Glasgow. If they rejected them he would reject them too; but the students could not be rejected, because the standard of test he had applied was higher than that applied, or could in the circumstances be applied to them. He appealed to Mr. Greaves, who had seen the students for two days, whether his standard of examination had not been as high as originally instituted by the Council. With these remarks he begged to thank the company for having drunk his health, and Mr. Maclean for the kind words he had expressed. His conduct had been before them for twelve years, and he had endeavoured, so far as he was aware, to discharge his duties, if not with ability, at all events with zeal and earnestness. He hoped the longer he lived he would be enabled to perform these duties better.—(Applause.)

Professor Williams, in proposing "Our Courts of Examiners," observed that they had two courts of examiners, namely, that of the Highland and Agricultural Society of Scotland, to whom they were all indebted, and that of the Royal College of Veterinary Surgeons. He thought the examiners had been the means of compelling the schools from year to year to extend and enlarge their curriculum, and to teach more scientifically. He thought the most of the gentlemen present were obliged to those courts of examiners for the services they had rendered, and that they were all proud of being members of the veterinary profession. They felt they had been examined by men holding the highest position in the sister profession. He thought the Highland and Agricultural Society of Scotland, and the Royal College of Veterinary Surgeons had endeavoured to appoint the best men as examiners of students; therefore the public had a guarantee that the men sent before them had been, as practitioners, up to the mark. Perhaps some of them had not been up to the mark, but that was not the fault of the examiners. He wished to couple with this toast the name of Mr. Robinson. He and that gentleman had been associated together for a number of years as examiners to the Highland and Agricultural Society of Scotland. They gave the students a most searching test, although they tried to do it in as mild a manner as possible, for they saw that some examiners by their manner used to frighten the students out of their wits. He could testify that Mr. Robinson always did his duty. He had witnessed Mr. Robinson's examination as one of the examiners to the Royal College, and he was proud that Mr. Robinson was now upon that board, for both the Glasgow and Edinburgh students received full justice. Professor Williams next referred to the loss which the examining board of the Royal College had suffered in the death of Professor Syme. The deceased gentleman took a warm interest in the veterinary profession, and, as examiner and chairman of the board, performed his duty in a way which was exceedingly encouraging to the students.

Mr. Robinson, in acknowledging the compliment paid to the Examiners, observed that he had had to do with only one Court of Examiners connected with the passing of students. His

practice was a mixed practice. He was obliged to study cattle pathology, which the more one studied the more one liked, because the diseases were not so tardy as those of horses. It just wanted a little tact to understand cattle diseases. Any sensible man who understood horse pathology would very shortly become a good cattle pathologist. He had found in *post-mortem* examinations that he had generally been pretty correct. They had often been reproached on account of the very meager education of the members of the veterinary profession generally; but, as in all professions, there were in theirs highly educated men; but singularly enough in the veterinary profession there had been a majority of men very meagerly educated. This had done much to lower the opinion the public should have of veterinary surgeons as a class of men to do good to the community. Professor Williams had said, if the examination of students were made by the preceptor or the head of any college, or by any one who had no connection with the veterinary schools, if they could examine upon the four heads laid down by the Royal College of Veterinary Surgeons, he thought that the test for admittance to any training college would in that way be quite severe enough to begin with. In a year or two he would go in strongly for preliminary examination upon Latin and French besides the five final tests. He thought it would do much to enhance the position of the veterinary profession if they could get well-educated men to enter it. They would find the profession respected, not, perhaps, equal to the sister profession, but she might very soon creep alongside. With respect to the practical examination, no one could say anything against it. It was certainly a movement in the right direction. Two years was a short time to cram; but it was astonishing how much the students acquired in that time. A young lad from some academy was sent to a veterinary school, and having learned all the theory in two years, he was sent out a clever veterinary surgeon, perhaps with a medal. That man went into practice. A common groom gazed and smiled at him; for the surgeon was practically a nincompoop, although theoretically he was very clever. This practical examination, however, would be a test that the students knew something of the practice of the profession. Perhaps it was difficult to carry out the clinical examination of cattle and sheep; but so far as horses were concerned, it was a simple matter. He could not very well see how cattle and sheep were to be examined practically, whereas the horse was a docile animal, and could be easily examined by forty students. Without a practical examination, he held that the examination of students was not complete. (Applause.)

Professor M'Call, in submitting the toast of "The Council of the Royal College of Veterinary Surgeons," said there was no toast he could propose with greater pleasure, for he stood in the position of having received much kindness from the Council of that body. He approached it some years ago for a charter almost upon his own personal merits and responsibility. He rejoiced

very much to think there were gentlemen there who in reality would treat every application upon its own merits irrespective of the source whence it came or the backing it received. If he had approached it backed by a duke or a town council, very likely he might have obtained a charter; but seeing he had obtained it simply and solely upon the statement he laid before the Council, he thought he was in duty bound to propose this toast. He could not forget the name of one now gone, who was one of the leading members of the Council, and whose son he had the very great pleasure of seeing at this table. He referred to their dear departed friend Mr. Lawson. He thought no man had so few enemies and so many friends as Mr. Lawson. Their departed friend was desirous on every occasion to help the willing and weak. He hoped the good example Mr. Lawson had set might descend to his son, and that also, as far as it could, be followed by him who now addressed them. He was exceedingly sorry he should for the first time have crossed swords with his brother Professor Williams; but he hoped that they both would retire from the field having greater respect for each other. (Applause.) He was strongly in favour of educational reform, until they should have men as well educated as in the medical profession. He coupled the toast with the name of his friend Mr. Greaves, who had been a friend of nearly all present, and whom he thanked for having come down to Edinburgh to superintend the examination of the Glasgow students at the end of the session. (Applause.)

Mr. Greaves responded as follows:—The Council consists of a body of men, as you know, which is appointed in accordance with our charter of incorporation. A moiety of the members are elected by ballot at the Annual General Meeting of the profession, held on the first Monday in May, in London. According to the charter they are selected out of the body of the profession. They are men who stand eminent in the profession, as teachers, writers, or practitioners. They are twenty-four in number, and are elected for three years. There are also six Vice-Presidents. They are elected by ballot, by the members of Council, at the first meeting of the Council. They are elected for one year, and at the same meeting the President is elected. He is elected also for one year. You have been told that I have held that high office. To occupy the highest and most honorable position that any man can occupy as a veterinary surgeon is, I opine, no light honour. I hold it is a legitimate ambition for any man to aspire to, whatever profession he may be engaged in. Then the duties of this body. Its duties are to keep a watchful eye over the profession generally, to assist in every legitimate and laudable way the advancement of the profession, and to appoint the examiners. They (the Council) are the only legitimate body that have authority to appoint a board of examiners; no other body of men have the power by law to grant diplomas. This Council have of late years been most earnestly engaged in the discussion of making an addition to the final examination, viz., a practical examination

of the student upon the living animal. This most desirable test has been now fully settled upon. Thanks especially to the Principal of Glasgow College, and the Principal of the Edinburgh College, the Council, though not legally empowered to enforce their own views, have also been engaged in the discussion of the preliminary examination of the student, which has now become established. I look upon these two measures as two of the greatest and most important measures adopted by the Council since the charter was granted. If rightly carried out they will prove a blessing not only to the profession but also to society at large.

Mr. Robinson, in proposing success to the Veterinary Associations of the United Kingdom, said that it was perhaps the most important toast of all, for he did not know if any associations had done more good. He said that ten years ago the West of Scotland Veterinary Medical Association was the nucleus of all the veterinary associations in the kingdom, and he thought that precedence was given to it unasked by all other veterinary associations. It was pleasing to see that the offsprings of the parent society were healthy and in good working order. In 1842 an attempt was made by their brother, Mr. Alexander Lawson, of Bolton, then of Glasgow, to form a veterinary medical association for the West of Scotland. Mr. Lawson had a large meeting to begin with, but ultimately the concern died a natural death. The attempt was also made in London, but it was likewise fruitless; and it was not until Mr. Anderson spoke of the utility and benefit of such an association, and stated at the same time that if they had only one meeting he was not afraid but that the enterprise would be successful. That success did, indeed, crown their efforts. He (Mr. Robinson) was happy to say that the association had now reached maturity, was undivided and in good working order, and had done much to advance the profession generally. He himself had benefited much from the meetings of the association. The social intercourse had been of the most agreeable kind, and a knowledge of the profession had been spread. No man of honour had failed to report unsuccessful cases. Indeed, it was the consideration of such cases which did much good. He coupled the toast with the name of Mr. Greaves, of Manchester; a warmer friend of veterinary science did not exist. (Applause.) He had neither grudged time nor money to be present and assist in the inauguration of all the veterinary associations in the kingdom. Mr. Robinson then advised all young members of the veterinary profession who had graduated at any school to make it the very first thing they did, for the benefit of themselves and their clients, to join the nearest veterinary association in the locality in which they might be placed. At the meetings they would get the advantage of the experience of the older members, who gave it without fee. If anything annoyed or puzzled them, they had only to address themselves to their seniors. Mr. Robinson concluded by expressing the hope that Mr. Greaves might long live to assist

and to inaugurate veterinary associations in every county in the three kingdoms. (Applause.)

Mr. Greaves responded as follows:—Veterinary medical associations have become an institution throughout the land during the last ten years. Their objects are chiefly twofold, viz., to change a spirit of antagonistic conduct into legitimate laudable conduct. We are living in an age when society cannot and will not respect the man who aspires to raise himself into a position by constantly trying to pull down the character of his fellow-man by speaking disparagingly of him behind his back. This line of conduct always provokes vindictive reprisals, and is most discreditable to members of an enlightened and educated profession. Can any man appear in a more contemptible character than that of continually sneering at and casting ridicule on a professional brother behind his back? No. By meeting face to face in these societies, and being in each other's company for two hours at a time every three months, there must be engendered a better acquaintance with each other. There must follow a less desire to injure the other's good name. Thus, by living more in peace with a neighbouring practitioner, you are contributing not a little to your own peace of mind and social comfort. But this is not all; you cannot attend these meetings without becoming more familiar with and gaining more extensive views of your profession. You gain knowledge from a number of individuals' experience. There are no other such facilities for gaining useful and practical knowledge in existence as these societies afford if they are only carried out in the right spirit. They must make us individually better practitioners, and also more useful members of society at large. As such I commend them to you with all my strength. Oh! how much I wish you could hit upon some plan which would overcome that shameful apathy, and rouse the profession to see its own interests in this respect. Thanking Mr. Robinson for his kind remarks, and you, gentlemen, for having made me an honorary member of your association, I shall now resume my seat.

The Croupier, in proposing the "Veterinary Benevolent Association," observed that it was at present in its infancy. When they took into consideration the benefits that were to be derived from this association, he thought that they would admit it deserved a place in the list of their toasts. They had with them a gentlemen who had taken a most marked interest in this society not only by his personal exertions, but in a pecuniary point of view. (Hear, hear). He thought he was not wrong in stating that Mr. Greaves was about to, or would leave to this association the sum of £1000. He (the Croupier) had been absent from England and Scotland for a long time, but from what he could recollect of reading in the deserts of the East, he thought he had seen that Mr. Greaves had volunteered to make a gift to that amount to this association. At present the association was, if he might so term it, *in embryo*. They were about to gather a

certain amount of money for the benefit of their widows and orphans. The society was divided into a mutual defence and benevolent association. Personally speaking he took no interest in the mutual defence department; for the reason that he was debarred from deriving its privileges. He could, however, say that this department conferred a great boon to the young practitioner, who probably went into a peculiar district of the country —a district, the people of which might pooh-pooh veterinary science, sometimes causing deaths that ought not to be. (Hear, hear.) A friend of his (Mr. Malcolm) was a recipient of the benefits of the association. Mr. Greaves was inspector on this particular occasion. Mr. Malcolm saved his reputation but lost his client, and was able to maintain that position in the district that every qualified veterinarian ought to hold. The Croupier coupled the toast with the name of Mr. Greaves.

Mr. Greaves said in reply: — The National Veterinary Benevolent Society is a society that has branched out of the Veterinary Mutual Defence Society. Its object is to collect a fund sufficiently large to enable its promoters to hold out a helping hand to any of its unfortunate members. There are occasionally cases in which a husband and father is suddenly snatched away from amongst us, leaving no provision whatever for those who were dependent upon him in life. Is there any higher or nobler sentiment which can be cherished in the human breast than the desire of soothing the sorrows, alleviating the wants, and mitigating the afflictions of the fatherless. The officers of this society are struggling hard and constantly to raise this fund. They spare neither trouble nor time for this purpose; they are frequently travelling immense distances at very serious inconvenience to themselves, never making one shilling charge for the expenses thus incurred, so anxious are they to husband the resources and increase the fund. The fund in the bank at last balance to the credit of the Benevolent Society was £297 4s. 9d., and to that of the Defence Society £326 14s. 3d. I having been elected treasurer to the Society feel it to be my duty on all occasions to solicit subscriptions and donations. I appeal to you now, believing as I do most sincerely that instances will occur in which some of the sorrows and sufferings of those in adversity and want will be in some measure mitigated by what I am doing in this good cause. I do wish I could enlist the sympathies of every member of my profession in its behalf. Gentlemen, when I remember how much sympathy and support we have received from the heads of the profession in Scotland; when I remember that that noble-minded lady who bears the honoured name of Dick, sister to the founder of veterinary science in Scotland, has bequeathed £100 to our fund; when I remember, also, that the principal of the Edinburgh College, and four of his late co-professors, were members of this Society, and also that the principal of the Glasgow College and two of his late co-professors were members—I say, when I think of this, I feel proud that I now stand on Scottish ground. Be-

yond these we have had Professor Gamgee and that beloved and ever-venerated Morton as subscribers. No other teacher has joined our ranks; nay, from some of them the cold shoulder and cold water have been our only portion. When I remember this, I say let the well-regulated mind draw its own conclusions. As for myself, it is the sweetest consolation of my life to know that I have in some measure contributed to the raising of a fund which will be a source of joy to some crushed, torn, bleeding heart when I am dead and gone. D. Maclean, *Hon. Sec.*

[The report *in extenso* of the annual dinner of the West of Scotland Association has been published by special request. Our readers are aware that of late years we have refrained from giving details of social meetings. —Eds.]

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The last Quarterly Meeting for the current year was held at the Queen's Hotel, Leeds, on Monday, the 31st October; the President, Mr. James Freeman, in the chair. The following members were also present, viz.: Charles Secker, John Cuthbert, W. Taylor, James Bale, R. Nicholson, J. W. Anderton, Charles Patterson, E. C. Dray, M. E. Naylor, J. S. Carter, P. Walker, W. Fearnley, and the Secretary. Mr. J. H. Ferguson, M.R.C.V.S., was present as a visitor, being introduced by Mr. Dray.

Apologies for non-attendance were received from Messrs. John and Joseph Freeman, T. Pratt, D. M. Taggart, W. Edmundson, S. F. Fallding, John Schofield, G. E. Schofield, P. Smith, and T. Greaves.

The minutes of the last meeting having been read and confirmed, the Secretary read letters announcing the resignation of Messrs. B. R. Kirk, of Huddersfield; and Richard Lord, of Halifax; also a letter which he had received from Mr. E. C. Dray, of Leeds, announcing his resignation in consequence of his retirement from the active duties of the profession, and his intention to fix his future residence in the south of England. Mr. Dray had alluded most feelingly to his long connection with the Society, having been one of its founders. "He thanked the members generally for their kindness and courtesy to him upon all occasions; he also returned his best thanks for the honour conferred upon him in being chosen the President for two successive years, and afterwards being elected to the office of Hon. Treasurer; to the Hon. Secretary he returned thanks for the politeness and good feeling which he had always received from him."

The Secretary said that he had read Mr. Dray's note, which had only been received that morning, with the greatest possible regret, and he was quite sure the Society would incur an irreparable loss in Mr. Dray's resignation, because he had been one of the most active, punctual, and indefatigable members of it. After some

further remarks, the Secretary said that he thought Mr. Dray ought not to be allowed to leave the Society without the members expressing their sense of his general conduct in some tangible manner and, therefore, he proposed "That an illuminated address, expressing the opinion of the members as to Mr. Dray's general conduct, be presented to him at the annual meeting in January, and that in lieu of the annual dinner a complimentary dinner be given to Mr. Dray."

Mr. Taylor seconded the motion, which was supported by *Mr. Cuthbert* and the *President*, and carried unanimously.

Mr. Dray was then unanimously elected a honorary member of the Society, for which honour he returned thanks.

Mr. Naylor gave notice that at the next annual meeting he should propose an *addendum* to Rule 3, viz.: "That any gentleman when nominated as a member of this Society, being at the time a member of any other Veterinary Medical Society, be admitted as a member of this Society upon payment of the annual subscription of 10*s.* 6*d.*"

Mr. John Henderson Ferguson was proposed as a member by *Mr. Dray*.

Mr. Nicholson next read his paper upon castration of the horse, detailing his *modus operandi* by the caustic clams with great minuteness. He averred that in his opinion this method of operating was the safest. He had operated upon large numbers of colts annually, and never had had any untoward results.

In the discussion which followed the principal topics alluded to were—1st. Which *modus operandi* was the most surgical, the least painful, and the soonest repaired.

2nd. Scirrhous cord, how caused, and the best mode of extirpation.

3rd. Secondary hæmorrhage, and the best means of its arrestation.

A long and instructive discussion took place, in which most of the members present joined.

A vote of thanks was unanimously awarded to the essayist for his kindness in providing such an able and practical paper for discussion.

Mr. Nicholson returned thanks, and said that his experience in castration had been very great, and attended with the greatest possible success.

Mr. Dray, Treasurer, read the annual financial statement, which showed a balance in favour of the Society of £92 11*s.* 5*d.*

The election of officers for the next year was then proceeded with: Mr. Robert Nicholson was unanimously elected the President; Messrs. Walker, Faulkner, and Murdoch, Vice-Presidents; Mr. Broughton was re-elected Hon. Secretary; and Mr. Cuthbert Hon. Treasurer, vice Mr. Dray.

Votes of thanks were passed to the retiring officer with acclamation.

At the next meeting Mr. William Taylor promised to read a paper for discussion.

Wm. Broughton, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

The twenty-seventh Quarterly Meeting of this Association was held at Mr. Gray's, Adelphi Hotel, Newcastle-on-Tyne, on Friday, 28th October, 1870. The members present were Messrs. D. Dudgeon, Sunderland (President); C. Hunting, South Hetton; M. Hedley, Darlington; and the Honorary Secretary.

The minutes of the preceding meeting were read and confirmed; the election of office-bearers was then proceeded with. Mr. Brydon, of Leaham, was elected President for the ensuing year.

Messrs. H. Hunter, Newcastle, and D. Macgregor, Bedlington, were elected Vice-Presidents.

Messrs. C. Hunting, H. E. Wilkinson, C. Stephenson, M. Hedley, J. E. Peele, and R. Hall were elected Councilmen.

Mr. D. Dudgeon, Treasurer, and Mr. J. Meikle, Secretary, were re-elected for the ensuing year.

Mr. Dudgeon read a paper relative to the following cases:

1st. Traumatic tetanus in a horse.

2nd. Idiopathic tetanus in a mare.

3rd. Spasm of the larynx in a horse.

4th. Strangulated hernia in a horse.

The particulars of these cases were very interesting, and led to a profitable discussion, in which all the members took part.

Mr. Hunting proposed a vote of thanks to Mr. Dudgeon, for his instructive paper; also for the ability and untiring attention with which he had conducted the duties of chairman during his term of office. The motion was supported by Mr. Hedley, and carried.

The Annual Meeting of the Society will be held in January, 1871, when the President will deliver his inaugural address.

John Meikle, *Hon. Secretary.*

Veterinary Jurisprudence.

SENDING BAD MEAT TO LONDON. IMPRISONMENT WITH HARD LABOUR.

At the November Sessions for the County of Middlesex William Birks and Walter Stevenson surrendered to their bail on a charge of consigning for purposes of public sale 150 lbs. of diseased and unwholesome meat to Robert Sketchley, salesman, of Charterhouse Lane. The indictment also contained a charge of conspiring to cause the same unwholesome meat to be exposed for sale. Mr. Poland and Mr. Besley (instructed by Mr. Baylis on behalf of the Commissioners of Sewers) prosecuted; Mr. Montagu Williams

(instructed by Mr. Ricketts) appeared for Birks, who pleaded "Guilty." Stevenson was defended by Mr. G. S. Griffiths (instructed by Messrs. Doyle and Edwards). It appeared from the evidence called for the prosecution that a cow belonging to Mr. Deaville, a farmer at Idridgehay, near Derby, was suffering from dislocation of the hip, and being incurable, the dislocated bone having penetrated the pelvis, and an abscess having commenced to form, was ordered by the veterinary surgeon to be destroyed. Mr. Deaville sold the animal for 15*s.*, believing it would be used for dogs' meat. It seems, however, that instead of being used for dogs' meat, the carcase was sold again to be used as meat for pigs. The person into whose hands it came sold it to Birks and Stevenson for 2*l.* 4*s.* (the value of the flesh being from 20*s.* to 25*s.*, and that of the hide and offal about 20*s.*). Birks had previously asked this person if he had any "flesh" that would do for either dogs or pigs. Instead of using the carcases for either of these purposes, Stevenson, who is a butcher by trade, and living at Derby (where Birks also lives, and is a publican), on the 12th of August took the four quarters to the railway station at Derby, where he packed it in cloth and sent it to London. Mr. Grattidge, Sanitary Inspector at Derby, saw the meat as it was being packed, and was satisfied from its appearance that the animal had suffered for some time from disease, and that the meat was unfit for human food. Stevenson told Mr. Grattidge that the meat belonged to himself and Birks, and also admitted being the person who had had some meat seized in the Derby market that morning. Mr. Grattidge telegraphed the address on the hamper containing the meat to the sanitary authorities at the Metropolitan Meat-market. Mr. Wylde, one of the sanitary inspectors at the Metropolitan Meat-market, appointed by the Commissioners of Sewers, received the telegram, and went early on the morning of the 13th of August to the Meat-market and stopped the hamper. Mr. Wylde described the meat as evidently unfit for human food, and after it had been examined by other inspectors it was condemned at Guildhall. As, however, there had been no exposure for sale, the prisoners could not be summarily dealt with by the magistrates under the Nuisances Removal Act, and they were committed for trial here on the common law offence of sending to market meat in an unwholesome and diseased state. Mr. Wylde's evidence was confirmed by that of other persons engaged in the inspection of meat at the Meat-market, and by Dr. Letheby. The defence of the prisoner Stevenson was based principally on the argument that he might himself have been unaware of the meat being unfit for human food, and might have believed the animal had died from the accident alone, and not from any disease. The jury found Stevenson *Guilty*.

It was stated that for the meat seized at Derby, Birks had been fined 10*l.*; and as regarded him, this distinction was drawn, that there was no reason to believe he had ever been concerned before in transactions of this kind, and in the present case had not, so far as was known, ever seen the meat that was sent to London, or done anything more than find some of the money to buy the

carcases. In consideration of these facts, the prosecution did not desire to press harshly against him.

Sir W. H. Bodkin said it was impossible to estimate the ruin and misery caused by sending this putrid meat to be retailed in London, where it carried disease among the poorer classes. The evidence showed that in this case the meat had been sent in a state that was absolutely disgusting, and Stevenson must be sentenced to six months' imprisonment, with hard labour. As regarded Birks, his case differed in a very marked manner from Stevenson's, and, as he had suffered pecuniarily by these proceedings, the order of the Court would be for him to enter into recognizances to come up for judgment if called on.

In connection with the practice of certain wholesale meat salesmen being selected for the disposal of meat unfitted for human food, we find by a report in the *Times*, November 23rd, that the same Robert Sketchley, of Charterhouse Street, was fined 3*l.* and costs, with the alternative of a month's imprisonment, for selling two quarters of "bad cow beef" to Edward Cozens, sausage maker, Beehive Wharf, Wharf Road, City Road.

The *Evening Echo*, in its comments on this case, says:—"When a police magistrate of some experience says that "he has heard disclosures of facts which he had never known before," it is probably worth while for the public generally to look into the case. Mr. Robert Sketchley, of Charterhouse Street, was yesterday before Mr. Newton, charged with having two quarters of cow beef for sale, which was unfit for human food. The filthy stuff was found on the chopping-board of Edward Cozens, Beehive Wharf, City Road, in course of preparation for sausages. Satisfactory proof was advanced that it had been sent from the defendant's shop, and the price given was 1*s.* 8*d.* a stone. So far, unfortunately, there was nothing uncommon. What roused Mr. Newton's horror was the revelation that it is the custom of some butchers to cut out diseased parts of a carcase and cover it with hot fat from good meat, to deceive the people. It is not pleasant to think how dreadful are the liabilities of sausage eaters, and we trust that if ever a case should again arise in which there is so good evidence of deliberate fraud as that afforded by the deception which horrified Mr. Newton, there may be no option of a fine allowed to the convicted prisoner.

MISCELLANEA.

We have received the following from Mr. Samuel Davies, agriculturalist, of Cilfallen, Newcastle-in-Emlyn, Cardiganshire. It is evident that the disease which he describes is not splenic apoplexy.

"In the *Welshman* newspaper an article is copied from the

Veterinarian, giving an account of a disease amongst cattle denominated splenic apoplexy, which has been rife during the last few weeks in different counties in England most distantly situated and under varying conditions. As a disorder which, I think, precisely identical has proved fatal to three of my stock, and as you desire every information in respect to splenic apoplexy, I shall endeavour to describe how my animals were affected as far as I am best able.

"The first case which occurred was that of a one-year-old steer as early as the last week in June. I had seen him the night before, when he looked well and thriving; but at the time the stock had to be taken to water, about eleven o'clock next morning, he was found unable to rise. I tried to bleed him in the field, but he died before I was able to get blood. The *post-mortem* examination showed great inflammation of the lining of the intestines, extending all along the throat. I ascribed it at the time to acute inflammation, but I am now of opinion it was the same disease as carried off the other two.

"The second, a two-year-old steer, was grazing in the field next to where the first was buried, and I am afraid dogs might have carried parts of him to devour.

"This one I first observed stiff and crouching in the hind quarter, but as he had been known to jump over a high gate, I attributed the defect to a sprain. As he continued to get worse I took him to the yard, bled him copiously, and administered a pound of salts, followed by linseed, castor and croton oils, giving twenty drops of the latter to a pint of the former to no effect. The animal would rest his head against the crib, and remain in the same position for hours; there was a difficulty in opening the jaws, and the eyes were protruding and staring, but no wildness was manifested as in brain fever. At last he was unable to get up, and lived for nine days upon drenches. Our untrained eyes could find nothing amiss on examination after death, except that the spleen was much distended.

"The third was a first-calf milch-cow, a cross short-horn and the native black breed, a most valuable animal for the dairy, and in excellent condition. The first symptoms here were exhibited when milking in the morning: the cow would not stand quiet, but turned round continually, and always on the same side. I here found the eyes protruding more than in either of the two other cases; the bowels at the time were naturally loose, but after administering medicine got very costive. I bled, as before, a full gallon from the neck, and the same quantity at intervals from the milk vein, followed by laxative medicine every six hours, and gave injections about every half hour during the daytime.

"In three days we got the medicine to operate naturally, and the cow amended. She was fed upon mashes and a few early turnips; we were preparing to turn her out to some piece of green clover, when she staggered and fell, and was unable to rise. She continued in that state for five weeks, would eat anything placed within her reach, but had no power whatever to rise, although she could handle her legs backwards and forwards when lying down. She had to be killed at

last, and was buried as she was. No one about her had seen such a case before, although during the last season the disease was very prevalent along the sea coast in this county. At last a cataract was formed over one eye, on that side which the head was always inclined. Since then another cow has been attacked with a very rare disease, at least in this neighbourhood, viz. inflammation of the larynx, a decided case of croup, but this soon yielded to fomentations, inhalations, and poultices.

"My farm is a very dry one, and all the cattle have to be driven to water, which in the summer, and especially such as this, is necessarily very foul. They have to feed in the summer mostly upon young grasses, a mixture of rye grass, and red clover."

ARMY APPOINTMENTS.

War Office, *Nov. 4th.*

Royal Artillery.—Veterinary Surgeon Griffiths Evans, M.D., to be veterinary surgeon of the first class, vice A. J. Owles, 6th Dragoons, promoted.

Veterinary Surgeon James Joseph Meyrick to be veterinary surgeon of the first class, vice E. Harrison, who has retired upon half-pay.

November 11th.

Veterinary Department.—J. Findlay, Gent., to be Acting Veterinary Surgeon.

OBITUARY.

We have to record the death of Mr. J. Noel Lockwood, M.R.C.V.S., Hull. His diploma bears date April 28th, 1847.

Also of Thomas Woodcock, M.R.C.V.S., Narborough, Leicestershire. His diploma bears date February 24th, 1823.

John Pullen, M.R.C.V.S., of Lyneham, Wilts. His diploma bears date April 15th, 1824; and

William John Bowman, M.R.C.V.S., of Howden, Yorkshire. His diploma bears date April 30th, 1856.

INDEX.

A.

ABANDONMENT of the proposed Veterinary Congress at Brussels, 347
Abortion and premature birth in animals, 645
Abscesses in the throats of cattle, 115
Abscess in the throat, two cases of, 44
Acorn-poisoning, 922
Act, Contagious Diseases (Animals), 49
Action against a Railway Company for injury done to sheep by delay in transit, 97
Action for damage to a cow.—Fisher *v.* Stringer, 894
Actual cautery, the, in veterinary practice, 550
use of the, 739, 904
in lampas, 905
W. A. Wilson's reply to Mr. Hill on the use of the, 817
J. W. Hill in reply to Mr. Wilson on the use of, 914
Acute inflammation of the heart, 193
Adams, J., records a case of tracheotomy, 379
Address, Introductory, Professor Tuson's, 789
to the members of the Lancashire Medical Association, delivered at Manchester, March 16th, 1870, by the President, George Morgan, M.R.C.V.S., Liverpool, 408
Admission of patients to veterinary hospitals, 315
Adsetts, Frederick, his case of hemiplegia, 920
Agent, new purifying, 930
Agricultural produce, effects of the drought on, 846
Society, Royal, grant of, to the Royal Veterinary College, 50
Statistics of Great Britain, 844
Albumen, 448
Alcohol and spirits, testing of, for amylic alcohol, 563
Alleged case of foot-and-mouth disease in the human subject, 50
cruelty to horses at a mowing match, 716
death from glanders, 784
Alimentary matter, suspected poisoning of horses by, 673
Amalgamation, proposed, of the medical societies, 62
Amylic alcohol, testing alcohol and spirits for, 563
Anæmia in beasts, cases of, 733
Anæsthetic compounds, new, 844
nitrous oxide as an, 121
protoxide of nitrogen as an, 62
Anæsthetics, 622
Anatomical specimens, selection of, at the Scotch examinations, 596
Anatomy and physiology of the horse's foot, observations on, *illustrated*, 3, 173, 285, 349, 421, 533, 597, 661, 725
Aneurism of the posterior aorta of a horse, 188
Animals, comparative number of, in France between 1852 and 1862, 559
composition of milk of, 560
influence of, on animals, 747
lower, rickets in the, 328
the transit of, by sea, 934
transit of, 340, 624
watering of, on railways, 51
"An Observer," his stray thoughts, &c., on our Journal, 680
Anodyne, a new, 621

Anterior portion of the lower jaw of a young calf, excision of the, 815
Anthrax, its transmission from the ox to man, 51
Aphthouse, fièvre, 245
Apoplexy, parturient, observations on, 661
cases of, 610
splenic, 212, 745
Appointment of inspectors, 98
Arab horse-dealer, 348
Architecture of the human body, 562
Are the pus-corpuscles derived from the white blood-cells?, 686
Are the two sides of the brain alike?, 929
Armatage, George, his new edition of "Every Man his Own Cattle Doctor," review of, 691
"Memoranda for Emergencies," review of, 692
Army appointments, 98, 172, 284, 532, 714, 786, 1004
Army farriers and shoeing smiths, 820, 921
Army veterinary surgeons practising privately, 420
Arsenical green pigments, dangers of, 449
Arsenic, test for, 564
Artificial light, effect of, on the eyes, 930
Association, British, medical science at the, 214
Associations, veterinary medical, want of in the south, 41
"A Student's" remarks on tuition in our veterinary school, 835
Australian beef and mutton, sales of, 324
Australian meat, how to cook, 321

B.

Bailey, R. P., on glanders in horses, and the Contagious Diseases (Animals) Act, 114
Barlow, Robert, his obituary, 99
Barron, Neil, his remarks on melanosis, 906
Bavaria, tobacco culture in, 562
Beale, Lionel S., on the real nature of disease germs, 849
Beasts, anæmia in, 733
Beef and mutton, sales of Australian, 324
Beet-root pulp, 464
Beleaguered Paris, food supplies in, 846
Bibby, James, his obituary, 420
Birth, premature, and abortion in animals, 645
Blakeway, Mr., his essay on strangles, 270
Blogg, Alfred, his obituary, 900
Blood-cells, nature and origin of, 326
Bloxam, Professor, review of his work, "Laboratory Teaching, &c.," 318
Bolton, John, his obituary, 348
Bone, navicular, on the structure and disease of the, 287
regeneration of, by periosteum, 748
Bones, fossil and recent, composition of, 623
Botany, principles of, 28, 107, 202, 289, 367, 438, 545, 614, 677, 735, 807, 907
Bowman, W. J., his obituary, 1004
Brain, are the two sides of the, alike? 929
of a dog, extensive disease of the membranes covering the left hemisphere of the, 365
Breeding of stock, 937
Brenning, R., his obituary, 420
British Association, medical science at the, 214
Broad, Alfred, his case of acute inflammation of the heart, 193
remarks on slings and slinging, *illustrated*, 801.
T. D., his remarks on the structure and physiology of the horse's foot, 901
on tumours, 903

Broad, T. D., on disease of the ligamentum nuchæ of a horse, 903
on the use of the actual cautery, 904
Bromide of potassium, 561
Brownley, David, his obituary, 788
Brown, Professor, his observations on eczema epizootica, 65
Brunner's glands not follicular, 215
Buckman, Professor, his principles of botany, 28, 107, 202, 289, 367, 438, 545, 614, 677, 735, 807, 907
Burt, James, his obituary, 596
Butter, Dutch, what it is made of, 52
from Thames mud, 313

C.

Camphor, the purification of, 623
Canada, cattle disease in, 787
Cancer of the penis of a pony—amputation, 435
Cancerous deposit in the liver and spleen in the dog, 46
growth on the penis, 242
Carbolic acid in skin diseases, 447
Carbon and glanders, 634
Carbonic oxide, improvement in the preparation of, 53
Carmichael, Alexander, his obituary, 900
Carrots, cultivation of, 348
Case of extrusion of the bladder in a mare during parturition, 33
rabies in a horse, 918
Cases of anæmia in beasts, 733
rabies in Lancashire, 607
Cats and dogs, sale of, for food, 931
Cattle, death of, from poisonous oilcake, 925
diseases, effects of, 788
singular transmission of anthrax in, 51
fever of Texas, 451
four cases of rabies in, 195
on the prevailing disease of, known as eczema epizootica, 65
market, new foreign, 931
murrains of India, 14
plague, 47, 116, 211, 308, 384, 444, 529, 556, 683, 743, 750, 787, 819, 839, 927
report on, 284
throats of, abscesses in, 115
watering in railway transit, 57
Causes of the spread of foot-and-mouth disease in Ireland, 741
Cautery, actual, use of the, 739
Central, proposed, Veterinary Medical Society, 432, 554, 660
Veterinary Medical Society, 709, 883
formation of a, 217
its first subject, 798
Channon, James, his obituary, 900
Charge against a farmer for working a horse with poll-evil, 282
Cheese, production of, 567
Chemical composition of sows' milk, 560
investigation of condensed milk, 622
Chemistry for medical students, new work on, 447
Chloride of sodium, poisoning by, 635
Ciliary movements and their nature, 687
Cinchona, 120
growth in India, 946
Circular on pleuro-pneumonia addressed to the Governors of the Provinces by the Minister of the Interior of Belgium, 335
letter on the proposed congress from Professors Thiernesse, Defays, and Wehenkel, 347
Clayton, M., on the use of the periplantar shoe in chronic laminitis, 294

Cleveland, R. C., his obituary, 788
"Club" or "stump foot," and the spring extension shoe, *illustrated*, 111
Club, property of Smithfield, 50
Coal and iron in the United States, 214
Coleman, J. B., records a case of fracture of the os pedis, 301
prize, 653, 724
Colic, spasmodic, 36
Collar, patent elastic horse, 297
Comparative number of animals in France between the years 1852 and 1862 inclusive, 559
Composition of fossil and recent bones, 623
Compounds, new anæsthetic, 844
Condensed milk, investigation of, 622
Congenital distortion of the fore limbs of a foal; operation; recovery, 296
Congestion, venous, in lambing ewes, 118
Congress, International Veterinary, 57
Connachie, Mr., his essay on abortion and premature birth in animals, 645
"Conservative," his remarks on Mr. Fearnley's "Tuition," 837
Constant, John, his obituary, 724
Constitution of the Central Veterinary Medical Society, report on, 883
Consumption of horse flesh, effects of the siege of Paris on the, 846, 931
Contagious Diseases (Animals) Act, 1869 (*Official Return*), 49, 119, 211, 283, 311, 386, 419, 446, 557, 619, 685
Contamination of water by sewage, 931
Continent, cattle plague on the, 750
Conviction for neglecting to give notice of the existence of foot-and-mouth disease, 785
Copper, quantity of, produced in the year 1866
Corpuscles, red, of the blood, import of the size of, 627
Cotton respirators, researches on, 930
Council, order of, respecting foot-and-mouth disease, 59
Cowie, James, his address to the Veterinary Medical Association, 954
Cow, rabies in a, 120
Cruelty, charge of, for using a horse suffering from poll-evil, 282
Cultivation of carrots, 348
Cunliffe, Thomas, on abscesses in the throats of cattle, 115
Curious instance of spontaneous combustion of the human body, 448
Cysticercus cellulosæ, 311, 557

D.

Dairy farming, a Northern Farmer on, 453, 573
Death of cattle from poisonous oilcake, 925
Dr. W. A. Miller, 899
sudden, of two horses, 673
Decrease of the importation of wool into Liverpool, 748
De la fièvre aphtheuse,—foot-and-mouth disease, 245
Deposit of sulphur, 564
scrofulous, in the lungs of a cow, 93
Descriptive anatomy of the horse and domestic animals, review of, 61
Dick, Professor, review of his occasional papers on veterinary subjects, 219
Disease, cattle, singular transmission of a, 51
extensive, of the membranes covering the left hemisphere of the brain of a dog, 365
foot-and-mouth, 48, 50, 65, 117, 212, 244, 298, 308, 385, 619, 684, 745, 841, 897, 926
germs, the real nature of, 849
of the ligamentum nuchæ of a horse, 903
scrofulous, of the eyeball and tracheal lymphatic glands, 102
termed "kidney dropper," 914
Dishorning cattle, 653
reply to Mr. Ernes's query, 787

Disinfectants in non-infectious diseases, 688
Distemper, Professor Brown on, 65
Distortion, congenital, of the fore limbs of a foal, 296
Dog, brain of the, extensive disease of the membranes covering the left hemisphere of the, 365
impactment of the rectum of a, with bone and sand, 555
jaundice in the, 393
poisoning of a, by strychnia, 209, 537
recovery of a, from poisoning by strychnia, 201
Dogs, famished, in Paris, 846
Dowthwaite, William, his obituary, 348
Doyle, Joseph, his obituary, 900
Drought, effects of, on the value of cattle in France, 620
the, 846
Dust, street, as a ferment, 844
Dutch butter, what it is made of, 52

E.

East Cumberland Agricultural Society and the foot-and-mouth disease, 50
Eczema epizootica in the horse, 298
observations on, 65
Education, scientific, 629
Effect of artificial light on the eyes, 930
certain medicines, 816
Effects of cattle disease, 788
medicines on animal temperature, 864
the drought on agricultural produce, 846
the value of cattle in France, 620
siege of Paris on the consumption of horseflesh, 846, 931
Eggs, 122
Eighty-one sheep suffocated, 899
Elastic, patent, horse collar, 297
Elkington, R., his obituary, 660
Enteritis, Professor Williams on, 337
Epizootic aphtha, Professor Brown on, 65
Ernes, W., his translations from the Continental journals—
Laceration of the ilio-rotulian muscle. By R. Bassy, 71
Microscopic inspection of meat in Prussia in 1867, 72
Exploration of the metacarpal arteries to assist the diagnosis of foot lameness in the horse, 241
Cancerous growth on the penis, 242
Fracture of the posterior maxillary, 243
Eczema epizootica, 244
De la fièvre aphtheuse,—foot-and-mouth disease, 245
Animal vaccine.—'Recueil de Médecine Vétérinaire,' 333
Circular addressed to the Governors of the Provinces by the Minister of the Interior of Belgium, 335
Jaundice in the dog, and its treatment. By M. Weber, veterinary surgeon, Paris, 393
Influence of common salt (chloride of sodium) on the absorption, by the animal economy, of the tribasic phosphate of lime. By MM. Zerbeline and Dorogoff, of St. Petersburgh, 477
Nourriture des chevaux de travail, 479
Hippophagia.—'Annales de Médecine Vétérinaire,' 577
International Veterinary Congress, 578
Fatal errors in rabies.—'Recueil de Médecine Vétérinaire.' By M. Decroix, V.S in the Imperial Guards, 581
Spiroptera scutata œsophagea bovis. By Professor Müller, of Vienna, 632
Trichina spiralis, 633
A fœtus in another fœtus, 633
Auscultation, 633

Ernes, W., his translations from the Continental journals (*continued*)—
Percussion, 633
Air in the veins and arteries, 634
Glanders and carbon, 634
Torsion of the uterus, 635
Poisoning by nitrate of soda, 635
Poisoning of seven animals (bovine) by a solution of twelve kilogrammes of chloride of sodium, given in a mistake instead of the usual water, 635
Observations on inversion of the vagina of the cow. By M. Deneubourg, 701
Two cases of twisting of the uterus. By J. M. Coutamine, V.S., Belgium, 865
Reform of the law in reference to apoplexy of the spleen (milzbrand). By Dr. Kuntz, 950
Errata, 172, 348, 532
Essay on colic and enteritis in the horse, 259
fractures; their cause and treatment, 974
pleuro-pneumonia, 766
Ether as an intoxicant, 448
phenyl, 622
Ewes, lambing, venous congestion in, 118
Examination for matriculation, 881
practical, of veterinary students, 123
preliminary, and the Edinburgh Veterinary College, 127
the practical, 898
Examinations, preliminary and practical, 302
Excision of the anterior portion of the lower jaw of a young calf, 815
Experiments in tinea favosa, 120
Exports of cattle from France, prevention of, 844
Extensive disease of the membranes covering the left hemisphere of the brain of a dog, 365
Extraordinary enlargement of the liver of a dog from deposit of fatty matter, 101
Extrusion of bladder in a mare during parturition, 33
Eyelids, laceration of the, 606

F.

Famished dogs in Paris, 846
Fatal cases of poisoning in a horse and mare from eating yew, 672
Fatality, great, among sheep and cattle in Morocco, 213
Farming, dairy, 453
Fearnley's "Tuition," 837
Fearnley, W., on subcutaneous injection of morphia in colic and enteritis, 375
Ferguson, Professor, on purgatives in peritonitis, 1
Fermentation, influence of hop on, 215
Ferment, street dust as a, 844
Fièvre aphtheuse, 245
First and second stages of labour, 932
Fish, preserved, 216
Fleming, George, his observations on the anatomy and physiology of the horse's foot, *with illustrations*, 3, 173, 285, 349, 421, 533, 597, 661, 725
proposed Central Veterinary medical Society, 432
Food supplies in beleaguered Paris, 846
Foot-and-mouth complaint, Professor Brown on, 65
disease, 48, 50, 65, 117, 212, 244, 298, 308, 385, 619, 684, 745, 841, 897, 926
alleged case of in the human subject, 50
and pleuro-pneumonia, 444

Foot, "club or stump," 111
Foreign animals, regulations relating to the landing and inspection of, in Great Britain, 754
cattle market, 418
and the trade in meat, 749
market for, 283, 931
markets, necessity for, 845
Fore limbs of a foal, congenital distortion of the, 296
Formation of a Central Veterinary Medical Society, 217, 642
Formation of oil in olives, 214
Fossil horse in Missouri, 685
Four cases of rabies in cattle, 195
Fox hounds, wholesale poisoning of, 313
Fracture of the os pedis, 301
posterior maxiliary, 243
tibia; recovery, 190
3 cases of, 299
Fractures, essay on, 974
France, comparative number of animals in, between 1852 and 1862, 559
prevention of exports of cattle from, 844
Frazer, Charles, his obituary, 788
James, his remarks on our social position, 917
Fungus, scarlatina, 215
Further report of cases of rabies in Lancashire, 607
Further researches on cotton respirators, 930

G.

Gentlemen selected to officiate as monitors at the Royal Veterinary College, 881
Germs, disease, on the real nature of, 849
Gillingham, John C., his obituary, 900
Girling, R., his obituary, 660
Glanders, 620, 843, 926
alleged death from, 784
and farcy, 310
Contagious Diseases (Animals) Act, 1869, 558
in horses, and the Contagious Diseases (Animals) Act, 114
Glands, Brunner's, not follicular, 215
mucous and peptic, of the stomach, 627
Glasgow Veterinary College—Introductory Lecture by Prof. M'Call, 967
Gleet, nasal, treatment of, by trephining the sinuses, 380
Gowing, Messrs. and Son, on cancerous deposit in the liver and spleen in the dog, 46
their case of enlargement of the liver of a dog from deposit of fatty matter, 101
aneurism of the posterior artery of a horse, 188
extensive disease of the membranes covering the left hemisphere of the brain of a dog, 365
record a case of poisoning of a dog by strychnia, 537
Grant of the Royal Agricultural Society to the Royal Veterinary College, 50
Grass, turning out horses to, 472, 570
Grease in the horse, essay on, 704
Great Britain, agricultural statistics of, 844
Great fatality among sheep and cattle in Morocco, 213
Greaves, Thomas, on violently drawn out tongue, 95
his reminiscence of the Central Veterinary Medical Society and its first subject, 798
on vomicæ in the horse, 84

Green, A., his case of paraplegia in the horse, 806
Grey, Alexander, his obituary, 788
Charles, two cases of abscess in the throat, 44
Grice, Charles G., records a case of congenital contraction of the fore limbs of a foal, 296
Growth, cancerous, on the penis, 242
of organisms in contact with phenic acid, 563

H.

Hack, M., his remarks on "kidney-dropper," 914
Heart, acute inflammation of the, 193
the human, daily work of, 449
Hardman, Frederick, his obituary, 788
Hemiplegia, 920
Hill, J. W., his observations on parturient apoplexy, 661
remarks on the use of the actual cautery, 739
in reply to Mr. Wilson on the use of actual cautery, 914
records fatal cases of poisoning by eating yew, 672
"Hippogriff," his remarks on army farriers and shoeing smiths, 820, 921
Hog crop of 1870, 748
Hippophagia, 577
Hogarth, George, his obituary, 788
Holmes, R. M., records a case of supposed eczema epizootica in the horse, 298
Hoole, A., his remarks on the practical examination, 898
Hop, influence of, on fermentation, 215
Horse, aneurism of the posterior artery of a, 188
collar, patent elastic, 297
-dealer, the Arab, 348
eczema epizootica in the, 298
-flesh, consumption of, effects of the siege of Paris on the, 846, 931
fossil, in Missouri, 685
grease in the, essay on, 704
indigestion in the, 515
paraplegia in the, 806
pedigree of the, 474
vomicæ in the, 84
Horses and stables, review of, 61
Horse's foot, anatomy and physiology of the, *with illustrations*, 3, 173, 285, 349, 421, 533, 597, 661, 725
structure and physiology of the, 901
Horses, glanders in, and the Contagious Diseases (Animals) Act, 114
turning out, to grass, 570
Hospitals, ventilation of, 699
How crops grow, review of Professor Johnson's treatise on, 320
Howell, D. B., records a case of amputation of the penis of a pony for cancer, 435
James, on scrofulous deposit in the lungs of a cow, 93
How motor nerves end in non-striated muscular tissue, 687
to cook Australian meat, 321
Human body, curious instance of spontaneous combustion of the, 448
the architecture of the, 562
heart, daily work of, 449
subject, alleged case of foot-and-mouth disease in the, 50
Hydrogen, sulphuretted, 449
Hygiene, new point of view for, 313
Hypophosphoric acid, use of, in agriculture for destroying insects, 449

I.

Ilio-rotulian muscle, laceration of the, 71
Impactment of the rectum of a dog with pieces of bone and a quantity of sand, 555
Importation of wool into Liverpool, decrease of the, 748

Import of the size of the red corpuscles of the blood, 627
Imports under the Contagious Diseases (Animals) Act, 745, 843, 929
Improvement in the preparation of carbonic oxide, 53
Inaugural address, Mr. D. Dudgeon's, 265
Inch of rain, 314
Increase in temperature of the pulse, 933
of vipers, 314
India, cattle murrain of, 14
India, cinchona growth in, 946
Indigestion in the horse, 515
Inflammation, acute, of the heart, 193
Infectious diseases, spontaneous generation and propagation of, 757
Influence of magnets on animals, 747
the hop on fermentation, 215
Injection of liquor ammoniæ in snakebite, 53
subcutaneous, of morphia in colic and enteritis, 375
Injury done to sheep by delay in transit, action for, 97
Inoculation as a preventive of contagious pleuro-pneumonia in cattle, 54, 128
Insects, hypophosphoric acid for destroying noxious, 449
Inspection, microscopic, of meat in Prussia in 1867, 72
Inspectors, appointment of, a letter on, 98
Intended practical examination of veterinary students, 123
International Veterinary Congress, postponement of, 347
Intestines of the horse, strangulation of, 676
Intoxicant, ether as an, 448
Introductory address, Professor Tuson's, 789
Investigation, chemical, of condensed milk, 622
Iodine, 930
Ireland Central Association, 153
Iron and coal in the United States, 214
steel, preserving, with sulphur, 216
manufacture of, 121
oxidation of, 392

J.

Jaw, lower, excision of portion of the, 815
Johnson, Professor, review of his treatise "How crops grow," 320
Johnston, James, his obituary, 596
Journal, our, stray thoughts on, 680

K.

Kay, John, his obituary, 788
"Kidney-dropper," the disease termed, 914
Kirk, B. R., his case of a rabies in a horse, 918

L.

Laboratory teaching, or progressive exercises in practical chemistry, review of Professor Bloxam's work on, 318
Labour, the first and second stages in, 932
Laceration of the eyelids. Removal of the membrana nictitans, 606
ilio-rotulian muscle, 71
Lambing ewes, venous congestion in, 118
Lambs, rickets in, 385
Lancashire, cases of rabies in, 607
Landing and inspection of foreign animals in Great Britain, regulations relating to, 754
Lawson, John, his obituary, 99
W. C., his paper on grease in the horse, 704
Leaders—
Inoculation as a preventive of contagious pleuro-pneumonia of cattle, 54
The intended practical examination of veterinary students, 123
Preliminary examination and the Edinburgh Veterinary College, 127
The formation of a Central Veterinary Medical Society, 217

Leaders (*continued*)—
Members of Council and the Veterinary Associations, 218
The admission of patients to veterinary hospitals, 315
The proposed Veterinary Pathological Society, 387
Educational reform, 450
The Texas cattle fever, 451
Morbid anatomy in its relation to veterinary jurisprudence, 565
Transit of animals, 624
Disinfectants in non-infectious diseases, 688
Cattle plague on the Continent, 750
The opening of the session at the Royal Veterinary College, 847
The transit of animals by sea, 934
Lead-poisoning, 845
milk a preservative against, 622
Leather, Joseph, his paper on indigestion in the horse, 515
Legrew, John, his obituary, 596
Leptothrix and vibrio bacillus, 562
Letter, circular, from Professors Thiernesse, Defays, and Wehenkel, on the proposed congress, 347
from Mr. Alexander Robinson, on his appointment as an examiner, 346
Mr. S. Davies, agriculturalist, Cilfallen, on cattle disease, 1002
Professor Williams, on the examinations at Edinburgh and Glasgow, 532
"Quæsitor," on "kidney-droppers," 787
the late President of the College relative to the selection of anatomical specimens, &c., at the Scotch examinations, 596
Ligamentum nuchæ of a horse, disease of the, 903
Lime, phosphate of, 563
Liquor ammoniæ, injection of, in snakebite, 53
Liver and spleen in the dog, cancerous deposit in, 46
Liver of a dog, enlargement of the, from deposit of fatty matter, 101
Liverpool, decrease of the importation of wool into, 748
Live stock, transmission of, 283
Lockwood, J. Noel, his obituary, 1004
London foreign cattle market, 345
water supply of, 237
Lower animals, rickets in the, 328
Lungs of a cow, scrofulous deposit in the, 93
Lusus naturæ (*Ectopia cordis*), 446

M.

M'Call, Professor, his introductory address, 967
M'Dermott, John, his obituary, 100
Macer, James, his case of strangulation of the intestines of a horse, 676
records a case of the recovery of a dog from poisoning by strychnia, 209
records cases of anæmia in beasts, 733
McGillivray, Alex. E., on the effect of certain medicines, 816
records a case of the excision of the anterior portion of the lower jaw of a young calf, 815
three cases of fracture of the tibia, 299
Magnets, influence of, on animals, 747
Mammary gland infected with the trichina spiralis, 620
Manufacture of iron, 121
Mare, extrusion of bladder in, 33
Market, foreign cattle, and the trade in meat, 283, 749
Marketing three hundred years ago, 239
Matriculation examination, 881
Maxillary, posterior fracture of the, 243
Measles [*mizzle*] in pigs, 311, 557
Meat, Australian, how to cook, 321

Meat, Australian, preservation of, 127
preserved, 52, 325, 561
supply, 216
Mechanism of suppuration, 563
Medical science at the British Association, 214
societies, proposed amalgamation of the, 62
students, new work on chemistry for, 447
plain truth to, 753
Medicinal pepsin, 693
Medicines, effect of certain, 816
on temperature, 864
Melanosis, 906
Members, new, of the profession, 97, 416, 881
of Council and the Veterinary Associations, 218
Membrana nictitans, removal of the, 606
Memoranda for emergencies, review of, 692
Metacarpal arteries, exploration of the, in foot lameness of the horse, 241
Microscopic inspection of meat in Prussia in 1867, 72
Milk, a preservative against lead-poisoning, 622
test for water in, 932
chemical composition of, in various animals, 560
condensed, investigation of, 622
Miller, Dr. W. A., his obituary, 899
Missouri, the fossil horse in, 685
Monitors, gentlemen chosen as, at the Royal Veterinary College, 881
Morocco, great fatality among sheep and cattle in, 213
Morphia, subcutaneous injection of, in colic and enteritis, 375
Motor nerves, how they end in non-striated muscular tissue, 687
Movements, ciliary, and their nature, 687
"M. R. C. S." on preliminary and practical examinations, 302
Mucous and peptic glands of the stomach, 627
Mud, butter from Thames, 313
Mulliner, Edward, his obituary, 420
Murrain, cattle, of India, 14

N.

Nasal gleet, treatment of, by trephining the sinuses, 380
National Veterinary Benevolent and Mutual Defence Society, 277
Nature and origin of blood-cells, 326
Navicular bone, on the structure and disease of the, 287
disease, pathology and treatment of, 75
Necessity for foreign cattle markets, 845
Nervous sensation, a new theory of, 747
Nettleship, Edward, his note on ringworm, 543
remarks on rabies, 539
New anæsthetic compounds, 844
anodyne, 621
foreign cattle market, 931
members of the profession, 97, 416, 881
point of view for "hygiene," 313
poison, 863
purifying agent, 930
register—letter from Mr. Coates, 786
work on chemistry for medical students, 447
Nitrate of soda, poisoning by, 635
Nitrogen, protoxide of, as an anæsthetic, 64, 121
Note on ringworm: transplantation of the fungus of ringworm from calf to man, 543

O.

Obituary—
Barlow, Robert, 99
Bibby, James, M.R.C.V.S., 420
Blogg, Alfred, M.R.C.V.S., 900
Bolton, John, 348
Bowman, William John, M.R.C.V.S., 1004
Brenning, R., M.R.C.V.S., 420
Brownlie, David, M.R.C.V.S., 788
Burt, James, M.R.C.V.S., 596
Carmichael, Alexander, M.R.C.V.S., 900
Channon, James, M.R.C.V.S., 900
Cleveland, R. C., M.R.C.V.S., 788
Constant, John, M.R.C.V.S., 724
Douthwaite, William, M.R.C.V.S., 348
Doyle, Joseph, M.R.C.V.S., 900
Elkington, R., M.R.C.V.S., 660
Fraser, Charles, M.R.C.V.S., 788
Gillingham, John C., M.R.C.V.S , 900
Girling, R., M.R.C.V.S., 660
Grey, Alexander, M.R.C.V.S., 788
Hardman, Frederick, M.R.C.V.S., 788
Hogarth, George, M.R.C.V.S., 788
Johnston, James, M.R.C.V.S., 596
Kay, John, M.R.C.V.S., 788
Lawson, John, M.R.C.V.S., 99
Legrew, John, M.R.C.V.S., 596
Lockwood, J. Noel, M.R.C.V.S., 1004
M'Dermott, John, M.R.C.V.S., 100
Miller, Dr. W. A., 899
Mulliner, Edward, M.R.C.V.S., 420
Percivall, Charles, M.R.C.V.S., 596
Price, Thomas Salusbury, M.R.C.V.S., 900
Pullen, John, M.R.C.V.S., 1004
Ryder, John, M.R.C.V.S., 900
Smith, Godfrey, M.R.C.V.S., 900
Stanley, Rose, M.R.C.V.S., 900
Todd, Thomas, M.R.C.V.S., 788
Woodcock, Thomas, M.R.C.V.S., 1004
Observations on the anatomy and physiology of the horse's foot, *illustrated*, 3, 173, 285, 349, 421, 533, 597, 661, 725
Mr. Overed's case of partial occlusion of the trachea, 189
cases of parturient apoplexy, 610, 670
the prevailing disease of cattle, known as eczema epizootica, epizootic aphtha, vesicular disease, distemper, murrain, or foot-and-mouth complaint, 65
"Observer," his remarks on the causes of the spread of the foot-and-mouth disease in Ireland, 741
Occasional papers on veterinary subjects, 219
Occlusion, partial, of trachea in a horse, 105
Oilcake, poisonous, death of cattle from, 925
Oil, formation of, in olives, 214
trade, the Pennsylvania, 448
Olives, formation of oil in, 214
On the patent elastic horse-collar, 297
real nature of disease germs, 849
structure and disease of the navicular bone, 287
use of ether as an intoxicant in the North of Ireland, 448
Opening of the session at the Edinburgh Veterinary College, 965
1870-71 at the Royal Veterinary College.—Introductory address by Professor Tuson, 789

Opening of the session at the Royal Veterinary College, leader on the, 847
Order of Council on the "foot-and-mouth disease," 59
importation of cattle from France, 782
sheep, and goats from France and States of the North German Confederation, 782
Organisms, growth of, in contact with phenic acid, 563
Origin, nature and, of blood-cells, 326
Os pedis, fracture of the, 301
Our journal, stray thoughts on observers and observations, contributors and contributions, 680
Overed, John D., his case of partial occlusion of the trachea in an entire horse, 105
observations on, 189
Owles, Alfred, his observations on a case of partial occlusion of the trachea, 189
remarks on the use of the actual cautery in lampas, 905
Oxidation of iron, 392
Ozone and picric acid, 561, 621

P.

Paraplegia in the horse, 806
Paris, dogs famished in, 846
food supplies in, 846
sewage water of, 314
Parliamentary intelligence, diseases of animals, &c., 283, 284, 345, 418, 529, 656
Partial occlusion of the trachea in an entire horse, 105
Parturient apoplexy in a sow, 35
observations on, 661
cases of, 610
Pathological Society, proposed Metropolitan Veterinary, 554
Pathology and surgery, veterinary, 611
treatment of navicular disease, 75, 287
Pedigree of the horse, 474
Penis, cancerous growth on the, 242
of a pony, cancer of the, 435
Pennsylvania oil trade, 448
Pepsin, medicinal, 693
Percivall, Charles, his obituary, 596
Performance of vivisection, Professor Huxley on the, 862
Periosteum, regeneration of bone by, 748
Periplantar shoe, use of the, in chronic laminitis, 294
Peritonitis, purgatives in, 1
Petroleum, warehousing of, 448
Phenic acid, growth of organisms in contact with, 563
Phenyl ether, 622
Phosphate of lime, 563
Physiology, practical, 944
Picric acid and ozone, 561
Pigments, arsenical green, danger of, 449
Pigs, measles [*mizzle*] in, 557
Pithing, slaughtering animals by, 572
Plain truth to medical students, 753
Pleuro-pneumonia, 47, 117, 212, 309, 384, 556, 618, 684, 744, 766, 842, 928
trial respecting, Faux *v.* Brookes, 343
contagious, of cattle, inoculation as a preventive of, 54, 128
essay on, 766
Poison, a new, 863
Poisoning, acorn, 922

Poisoning in a horse and mare from eating yew, 672
of animals by chloride of sodium, 635
a dog by strychnia—recovery. By James Macer, M.R.C.V.S., Weston, Huntingdon, 209
By Messrs. Gowing & Son, M.R.C.V.S., Camden Town, 537
foxhounds, 313
Poll evil, prosecution for using a horse affected with, 282
Position, our social, 917
Posterior aorta of a horse, aneurism of the, 188
maxillary, fracture of the, 243
Potassium, bromide of, 561
Poulton, T. J., on spasmodic colic, 36
the want of veterinary medical associations in the south, 41
Poyser, G., his essay on pleuro-pneumonia, 766
Practical examination, 898
enquiry committee, reports of the, 873
physiology, 944
Preliminary and practical examinations, 302
examination and the Edinburgh Veterinary College, 127
Preparation of carbonic oxide, improvement in, 53
Presentation of plate to Principal Williams, Veterinary College, Edinburgh, 649
Preservation of meat, 52, 127, 325, 561
Preserved fish, 216
Preserving iron and steel with sulphur, 216
President, the late, of the College, letter from, relative to the selection of anatomical specimens, &c., at the Scotch examinations, 596
Prevention of exports of cattle from France, 844
Price, Thomas Salusbury, his obituary, 900
Principles of botany, *illustrated*, 28, 107, 202, 289, 367, 438, 545, 614, 677, 735, 807, 907
Price, Salusbury, his account of the treatment of nasal gleet by trephining the sinuses, 380
Production of cheese, 567
ozone, 621
Profession, new members of the, 97, 416, 881
the veterinary, in India, 43
Professor Brown on mouth-and-foot disease, 65
Huxley on the performance of vivisection, 862
Tuson's 'Veterinary Pharmacopœia,' 420
Williams on enteritis, 337
Project for the formation of a museum in Paris of the various types of the human race, 562
Proposed amalgamation of the medical societies, 62
Central Veterinary Medical Society, 387, 432, 554
Prosecution under the Contagious Diseases (Animals) Act, 1869, 278
Protoxide of nitrogen as an anæsthetic, 64, 121
Prussia, rock salt in, 564
Pullen, John, his obituary, 1004
Pulp, beet-root, 464
Pulse, increase in the temperature of the, 933
Purgatives in peritonitis. By Professor Ferguson, H.M.V.S., Dublin, 1
Purification of camphor, 622
Purifying agent, new, 930
Purpura, two cases of, associated with intestinal submucous hæmorrhage, 373
Pus-corpuscles, are the, derived from the white blood-cells? 686

Q.

Quackery in the veterinary profession, 382
"Quæsitor," his case of fracture of the tibia, 190
records a case of laceration of the eyelids, 606
his enquiry respecting the "kidney dropper," 787
Quantity of copper produced in the year 1866 over the whole world, 122
Question of spontaneous generation and the propagation of infectious diseases—British Association, 757

R.

Rabies; its prevalence, and some suggestions for future investigation, 539
cases of, in Lancashire and Yorkshire, 445, 607
four cases of, in cattle, 195
in a horse, case of, 918
Railway, transit of cattle by, 340
watering of animals on, 51
Rain, an inch of, 314
Read, Mr. C. Sewell, M.P., and the Veterinary Department of the Privy Council, 659
Recovery of a dog from poisoning by strychnia, 209, 537
Rectum of a dog, impactment of the, with bone and sand, 555
Reform, educational, 450
Regeneration of bone by periosteum, 748
Regimental veterinary surgeons. By "Inquirer," 531
Regulations relating to the landing and inspection of foreign animals arriving at ports in Great Britain, 754
Relation as to area between the tendon and the muscle, 120
Remarks on some of the causes of the spread of the foot-and-mouth disease in Ireland, 741
upon the use of the actual cautery as applied by the veterinary profession, 739
Reminiscence of the Central Veterinary Medical Society and its first subject, 798
Removal of the membrana nictitans, 606
Removing a diseased cow, heavy fine for, 595
Report of the deputation to the authorities of the schools in Scotland, 1869, 146
Examination Inquiry Committee, 139
on the mode of conducting the practical examination of candidates for the diploma of the Royal College of Veterinary Surgeons, 252
on cattle plague, 284
Reports of the Practical Examination Inquiry Committee, 873
Respirators, cotton, researches on, 930
Reviews—'Horses and Stables,' by Colonel Fitz-Wygram, 15th the King's Hussars, 61
'Descriptive Anatomy of the Horse and Domestic Animals.' Compiled chiefly from the manuscripts of Thomas Strangeways, LL.D., M.R.C.V.S., and the late Professor Goodsir, F.R.S.S. Lond. and Edin. By J. Wilson Johnston, M.D., F.R.S.E., and T. J. Call, L.R.C.P.E., 61
'Occasional Papers on Veterinary Subjects.' By William Dick, late Professor of Veterinary Surgery to the Highland and Agricultural Society of Scotland, Founder of the Edinburgh Veterinary College, &c. With a Memoir by R. O. Pringle, Editor of the 'Farmer's Gazette,' 219
'Laboratory Teaching; or, Progressive Exercises in Practical Chemistry.' By Charles Loudon Bloxam, Professor of Practical Chemistry in King's College, London, 318

Reviews (*continued*)—
'Tables of Tests for the Metals and Acid-Radicals occurring in Solutions of the Salts most commonly met with in Medicine.' Arranged by Richard V. Tuson, F.C.S., Professor of Chemistry and Materia Medica at the Royal Veterinary College, &c., 319
'How Crops Grow, a Treatise on the Chemical Composition, Structure, and Life of the Plant, for Agricultural Students.' By Samuel W. Johnson, M.A., Professor of Agricultural Chemistry in the Sheffield Scientific School of Yale College. Adapted for English use by A. H. Church, M.A., Professor of Chemistry at the Royal Agricultural College, Cirencester, and W. T. T. Dyer, B.A., Professor of Natural History at the Royal Agricultural College, Cirencester, 320
'Every Man his own Cattle Doctor.' By Francis Clater. Entirely re-written to the present date by George Armatage, M.R.C.V.S., 691
Reynolds, R. S., case of scrofulous disease of the eyeball and tracheal lymphatic glands, 102
Rickets in lambs, 385
the lower animals, 328
Ringworm, note on, 543
Rock salt in Prussia, 564
Royal Agricultural Society, grant of, to the Royal Veterinary College, 50
—Monthly Council, 389
Royal Commission on the State of Science, 313
Ryder, John, his obituary, 900

S.

Sale of cats and dogs for food, 931
Sales of Australian beef and mutton, 324
Santy, A. H., his observations on parturient apoplexy, 610
Scab in sheep, 48, 118, 213, 620
Scarlatina fungus, 215
Schools, veterinary, tuition in our, 730
Science, Royal Commission on the State of, 313
Scientific education, 629
Scrofula in a cow and pig, 309
Scrofulous deposit in the lungs of a cow, 93
disease of the eyeball and tracheal lymphatic glands, 102
Sea, the transit of animals by, 934
Seaman, Isaac, on "Club" or "Stump Foot," and the spring extension shoe, 111
Sending bad meat to London. Imprisonment with hard labour, 1000
Sensation, nervous, a new theory of, 747
Sewage, contamination of water by, 931
water of Paris, 314
Sheep and cattle, great fatality among in Morocco, 213
smallpox of, 48, 620, 684, 745, 842, 928
eighty-one, suffocated, 899
injury done to by delay in transit, action for, 97
by dipping, 714
scab in, 48, 118, 213, 620
Siege of Paris, effects of the, on the consumption of horseflesh, 846, 931
Singular action for breach of an agreement, 170
transmission of cattle anthrax, 51
Skin diseases, carbolic acid in, 447
Slings and slinging, *illustrated*, 801
Smallpox and vaccination in Paris, 312
Smithfield Club, the income and property of, 50
Smith, Godfrey, his obituary, 900

Snakebite, injection of liquor ammoniæ in, 53
Social position, our, 917
Societies, medical, proposed amalgamation of the, 62
Soda, nitrate of, poisoning by, 635
Sows' milk, chemical composition of, compared with other animals, 560
Spanish or Texan fever, 568
Spasmodic colic, 36
Splenic apoplexy, 212, 745
Spontaneous combustion, instance of, 448
Spooner, W. C., his lecture on the breeding of stock, 937
Spread of the foot-and-mouth disease in Ireland, causes of the, 741
Stages, the first and second, in labour, 932
Stanley, Rose, his obituary, 900
E., on the cattle murrain of India, 14
State of science, Royal Commission on the, 313
Statistics, agricultural, of Great Britain, 844
Stock, the breeding of, 937
Stone, Mr. W. H., M.P., his system of watering cattle in railway transit, 51
Strangles, an essay on, 270
Street dust as a ferment, 844
Strangulation of the intestines of the horse, 676
Structure and physiology of the horse's foot, 901
Strychnia, recovery after poisoning of a dog by, 209, 537
Students, practical examination of veterinary, 123
Studies on the sewage-water of Paris, 314
Stump, club foot, the spring extension shoe in, 111
Subcutaneous injection of morphia in colic and enteritis, 375
Sudden death of two horses. Suspected poisoning of three by alimentary matter, 673
Sulphur, deposit of, 564
preserving iron and steel with, 216
Sulphuretted hydrogen, 449
Supply, meat, 216
water, of London, 237
Suppuration, mechanism of, 563

T.

Tables of tests for the metals and acid-radicals, review of Professor Tuson's, 319
Tailby, M., his case of extrusion of the bladder in a mare during parturition, 33
Temperature, effect of medicines on, 864
of the pulse, increase in, 933
Tendon and muscle, relation as to area between, 120
Test for arsenic, 564
water in milk, 932
Testing of alcohol and spirits for amylic alcohol, 563
Texan, or Spanish, fever, 568
Thames mud, butter from, 313
Thompson, T. J., his two cases of purpura associated with intestinal submucous hæmorrhage, 373
Three cases of fracture of the tibia, 299
Throats of cattle, abscesses in, 115
Throat, two cases of abscess in the, 44
Tibia, fracture of the, 190
three cases of, 299
Tinea favosa, experiments in, 120
Tobacco culture in Bavaria, 562
Todd, Thomas, his obituary, 788
Toll, W. P., records sudden death and suspected poisoning of five horses, 673

Tongue, violently drawn out, 95
Tracheal lymphatic glands, disease of, 102
Trachea, partial occlusion of the, in a horse, 105
Tracheotomy, 379
Transit of cattle by railway, 283, 340, 624
by sea, 934
order of Council, 526
Transmissibility of tuberculosis, 216
Transmission, singular, of a cattle disease (anthrax), 51
Treatment of nasal gleet by trephining the sinuses, 380
Trichina spiralis, location of the, in the mammary gland, 620
Tuberculosis, transmissibility of, 216
Tuition in our veterinary schools, 730, 835
Tumours, on, 903
Turning out horses to grass, 472, 570
Tuson, Professor, his introductory address at the opening of the session 1870-71 at the Royal Veterinary College, 789
on medicinal pepsin, 693
review of his tables of tests, &c., 319
his 'Veterinary Pharmacopœia,' 420
Twisting of the uterus, cases of, 635, 865
Two cases of abscess in the throat, 44
purpura associated with intestinal submucous hæmorrhage, 373
sides, the, of the brain, are they alike? 929

U.

United States, coal and iron in the, 214
Use of hypophosphoric acid in agriculture for the destruction of noxious insects, 449
the actual cautery, 904
in "lampas," 905
periplantar shoe in chronic laminitis. By M. Clayton, médecin vétérinaire, Paris, 294
Uterus, twisting of the, 635, 865

V.

Vaccination, smallpox and, in Paris, 312
Value of cattle, effects of the drought on the, in France, 620
Vagina of the cow, inversion of, 701
Various types of the human race, proposed museum in Paris of the, 562
Veins and arteries, air in the, 634
Venous congestions in lambing-ewes, 118
Ventilation of hospitals, 699
Vesicular disease, Professor Brown on, 65
Veterinary Benevolent Society, 596
College, Royal, opening of the session 1870-71, introductory address by Professor Tuson, 789
gentlemen selected to officiate as monitors at the, 881
matriculation examination at the, 881
Veterinary Jurisprudence—
Action against a railway company for injury done to sheep by delay in transit, 97
Singular action for breach of a professional agreement.—Fearnley *v.* Pattison, 170
Prosecution under the Contagious Diseases (Animals) Act, 1869, 278
Charge of cruelty against a farmer.—Using a horse with poll-evil, 282
Transit of cattle by railway, 340
Pleuro-pneumonia.—Faux *v.* Brookes, 343
Contagious Diseases (Animals) Act.—Scab in sheep, 419

Veterinary Jurisprudence (*continued*)—
Sheep scab.—Conviction under the Contagious Diseases (Animals) Act, 530
Sale of a glandered horse.—Conviction under the Contagious Diseases (Animals) Act, 531
Heavy fine for removing a diseased cow, 595
Cruelty to Animals.—Dishorning, 653
Death of sheep from dipping, 714
Sending bad meat to London, 715
The mowing match at Bartle.—Alleged cruelty to animals at the, 716
Alleged death from glanders, 784
Action for damage to a cow.—Fisher *v.* Stringer, 894
Sending bad meat to London.—Imprisonment with hard labour, 1000
Veterinary, Central, Medical Society, 217, 432, 554, 660, 709, 798, 883
Department of the Privy Council, 659
Glasgow, College, 967
Lancashire, Medical Association, 407, 408, 644
Liverpool, Medical Association, 515, 973
Medical Association, Mr. Cowie's address to the, 954
National, Benevolent and Mutual Defence Society, 523
North of Scotland, Medical Association, 416, 711, 1000
Scottish Metropolitan, Medical Society, 161, 336, 645
West of England, Medical Association, 75, 983
Scotland, Medical Association, 780, 983
Yorkshire, Medical Society, 276, 414, 514, 709, 998
profession in India. By a Local Veterinary Surgeon, 43
profession, quackery in the, 382
Pathological Society, proposed Metropolitan, 554
pathology and surgery, 611
Surgeons, Royal College of.—Meetings of Council, 134, 636, 869
Report of the examination inquiry committee, 139, 252
Report of the deputation to the authorities of the schools in Scotland, 1869, 146
Statement left with trustees, 151, 499
Special meetings of, 247, 489, 584, 585
Annual report, the, 491, 495
meeting, 494
New members of Council, 512
Appointment of registrar to the, 587
Finance Committee, 587, 879
House Committee, 588
Parliamentary Committee, 588
Matriculation examination, 588
Deputy Committee's Report, 588
Form of record of examination, 878
Exemption from juries, 880
and the Central Veterinary Medical Association, 880
schools, tuition in our, 730, 835
subjects, review of Professor Dick's occasional papers on, 219
Vibrio bacillus and leptothrix, 562
Violently drawn-out tongue, 95
Vipers, increase of, 314
Vivisection, Professor Huxley on the performance of, 862
Voelker, Dr. Augustus, on beet-root pulp, 464
Voice from the provinces on the preliminary and practical examinations, 302
Vomicæ in the horse, 84

W.

Want of veterinary medical association in the south. By Thomas James Poulton, M.R.C.V.S., Wrotham, 41
Warehousing petroleum, 448
Water, contamination of, by sewage, 931
Watering of cattle in railway transit, system proposed by W. H. Stone, M.P., 51
Water in milk, a test for, 932
sewage, of Paris, 314
supply of London, 237
What Dutch butter is made of, 52
Wholesale poisoning of foxhounds, 313
Williams, Professor, communicates a case of the recovery of a dog from poisoning by strychnia, 201
Wilson, W. A., his remarks on the actual cautery in veterinary practice, 550
reply to Mr. Hill, on the use of the actual cautery, 817
Woodcock, Thomas, his obituary, 1004
Wool, 121
Worthington, William, records four cases of rabies in cattle, 195
reports cases of rabies in Lancashire, 607

Y.

Yew, poisoning in a horse and mare from eating, 672

Z.

Zoological and physiological import of the size of the red corpuscles of the blood, 627

LONDON : PRINTED BY J. E. ADLARD, BARTHOLOMEW CLOSE.

41.8
V 64

AUTHOR.

TITLE.

v.45: Veterinarian. 1872.

MAY 3 1898 B.A. JUN 13 1898 G.

UNIVERSITY OF ILLINOIS-URBANA
3 0112 110327084